

must be identified in the SIP that will facilitate the reduction in emissions and show progress toward attainment of the O₃ standard. With regard to CO and PM₁₀ nonattainment areas, plans must be submitted that identify ways to reduce emissions and show progress toward attainment. Additionally, the 1990 CAA promulgates new toxic air pollutant standards and identifies affected sources and control measures required to meet these standards.

The 1990 CAA also provides that a federal agency cannot support an activity unless the federal agency determines that the activity will conform to the most recent EPA-approved SIP within the region of the proposed action. This means that federally supported or funded activities will not (1) cause or contribute to any new violation of any air quality standard; (2) increase the frequency or severity of any existing violation of any standard; or (3) delay the timely attainment of any standard or any required interim emission reductions or other milestones in any area. In accordance with Section 176(c) of the 1990 CAA, the EPA promulgated the final conformity rule for general federal actions in the November 30, 1993 *Federal Register*. Section 5.2 of this EIS/R presents a discussion of conformity issues that relate to the proposed actions.

4.7.2.2 State Regulations

The CAA delegates to each state the authority to establish air quality rules that must be at least as restrictive as the federal requirements. The ARB has established the CAAQS, which are more restrictive than the NAAQS and include pollutants for which there are no federal standards.

California Clean Air Act of 1992 (CCAA) develops and implements a program to attain the CAAQS for O₃, CO, NO₂, SO₂, PM₁₀, lead, sulfates, hydrogen sulfide, and visibility reducing particulate matter. Similar to the federal nonattainment rating system, the state ozone nonattainment rating system is based on a design day concentration. Attainment is reached when the design day concentration falls below 0.09 ppm. The state nonattainment rating system is shown in Table 4.7-3. Progress toward attainment is demonstrated by implementation of new emission control measures. Since the CAAQS are more restrictive than the NAAQS, emission reductions beyond what would be required to show attainment for the NAAQS will be needed. Consequently, the main focus of attainment planning in California has shifted from the federal to state requirements.

Table 4.7-3. State Nonattainment Classifications

<i>Pollutant/Classification</i>	<i>Design Day Value Concentration (a)</i>
Ozone	
Moderate	0.09-0.12 ppm, inclusive
Serious	0.13-0.15 ppm, inclusive
Severe	0.16-0.20 ppm, inclusive
Extreme	> 0.20 ppm
Carbon Monoxide	
Moderate	9.0-12.7 ppm, inclusive
Serious	> 12.7 ppm
<i>Note:</i> a. Ozone data based on 1989-1991 calendar years, without regard to transport conditions. CO data based on 1989-1990 and 1990-1991 winter seasons.	
<i>Source:</i> California Health and Safety Code Sec. 40921.5.	

4.7.2.3 Local Regulations

Rules adopted by local air pollution control districts and accepted by the ARB are included in the SIP. When approved by the EPA, these rules become federally enforceable. The BAAQMD, the SMAQMD, and the SJVUAPCD have each developed rules and regulations specific to their jurisdiction. Rules from the BAAQMD that may apply to the LTMS are presented below. These examples from the BAAQMD are considered typical of the types of rules that would also be found in the SMAQMD and SJVUAPCD.

BAAQMD Rules and Regulations

The BAAQMD, having received the necessary approvals, has developed the *BAAQMD Rules and Regulations* to regulate stationary sources of air pollution in the San Francisco Bay Area Air Basin (SFBAAB). Selected rules and regulations described from this document pertinent to the LTMS and related activities are summarized below:

- **RULE 1-301 - PUBLIC NUISANCE.** This rule states that no person shall discharge from any source air contaminants that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or public, or that endangers the comfort, repose, health or safety of any such persons or public, or that causes, or has a tendency to cause, injury or damage to business or property.
- **REGULATION 2** defines the review process of sources that require air permits. This regulation

sets forth preconstruction requirements for stationary sources that may include Best Available Control Technology (BACT) and emission offsets. Additionally, Rule 2-1-310.3 states that the air pollution control officer shall not authorize the installation or operation of any new source that is subject to the requirements of CEQA, until all CEQA requirements are satisfied.

- REGULATION 6 identifies standards that limit particulate matter emissions and the visibility and opacity of effluent from all sources.
- REGULATION 7 identifies limitations on odorous substances and specific emission limitations on certain odorous compounds.
- RULE 9-1-304 states that a person shall not burn any liquid fuel having a sulfur content in excess of 0.5 percent by weight. However, this rule exempts fuel used to propel any motor vehicle, boat, or ship. As a result, the sulfur limitation would only apply to project construction machinery and dredges.

For the purpose of evaluating air quality impacts from proposed projects, the following emission thresholds are used by the BAAQMD to determine the significance of pollutant emissions: 80 pounds per day or 15 tons per year of ROG, NO_x, or PM₁₀ (BAAQMD 1995). The SMAQMD has set significance levels for ROG or NO_x (ozone precursors), and PM₁₀ at 85 and 275 pounds per day, respectively, (personal communication, G. Tholen 1995). The SJVUAPCD considers emissions of ROG or NO_x greater than 10 tons per year to be significant (personal communication, D. Mitchell 1995). For pollutants without a specific emission significance threshold, both the SMAQMD and the SJVUAPCD consider the CAAQS and NAAQS as the determining factor for indicating when an impact is significant.

Attainment/Maintenance Plans

Ever since the NAAQS for O₃ was promulgated by the EPA in 1971, violations of this standard have occurred annually in the SFBAAB. Pursuant to the regulations of the CAA, the ARB was required to periodically submit plans to the EPA that would demonstrate attainment or progress towards attainment of the O₃ standard, beginning in 1979. These *attainment plans*, authored largely by the BAAQMD, outlined measures that would reduce emissions mainly from stationary sources and eventually bring the region into attainment. Due to the success of these plans and the decrease in emissions from on-road vehicles over the last two decades, no O₃

violations occurred in the SFBAAB from 1990 through 1992. In 1993, the BAAQMD requested the EPA to redesignate the region as attainment for O₃ in the submittal of the *Redesignation Request and Maintenance Plan for the National O₃ Standard* (BAAQMD, ABAG, and MTC 1993) (O₃ Maintenance Plan). Upon final approval of the O₃ Maintenance Plan by the EPA, this redesignation became effective on June 21, 1995.

However, due to violations of the O₃ standard in 1995 and 1996, the EPA is in the process of redesignating the SFBAAB from attainment/maintenance to nonattainment of the O₃ standard. This redesignation became effective on August 10, 1998; it will require the BAAQMD to prepare a new plan that demonstrates attainment of the O₃ standard within a mandated time frame.

In addition to the O₃ redesignation, the BAAQMD requested the EPA to redesignate the SFBAAB as in attainment of CO, since the region did not record any violations of the eight-hour CO NAAQS for the 2-year period of 1992-1993 (the one-hour standard for CO has not been exceeded in the region since 1985). Credit for this air quality improvement can be traced to improvements to the vehicle inspection and maintenance (I&M) program and additional contingency measures adopted in 1990 and the introduction of a wintertime oxygenated fuels program, as required by the 1990 CAA. The request for redesignation is presented in the *Redesignation Request and Maintenance Plan for the National CO Standard* (BAAQMD, ABAG, and MTC 1994). This CO Maintenance Plan contains a contingency measure that would improve the effectiveness of the existing I&M program in the event of a CO standard violation. On June 1, 1998, the SFBAAB was redesignated to attainment of the national CO standard by the EPA.

In conformance with the CCAA, the BAAQMD developed the *Bay Area 1994 Clean Air Plan* (CAP) to bring the SFBAAB into attainment with the O₃ CAAQS (BAAQMD 1994). The CAP is an updated version of the 1991 plan and includes eight additional control measures beyond what were proposed in the 1991 plan. The control measures proposed in the CAP represent all feasible measures to control O₃ precursor emissions in the SFBAAB. Nevertheless, the CAP cannot demonstrate attainment of the state O₃ standard by 1997. As a result, the BAAQMD will be required to update the CAP in 1997 to report on progress toward attainment of the state O₃ standard. Application of all feasible control measures outlined in the CAP would theoretically reduce basinwide emissions of ROG and NO_x by 13.6 and 7.3 percent, respectively, during the 1994 through 1997 planning period.

Emission control measures proposed in the CAP include indirect and area source control programs, application of Best Available Retrofit Control Technology (BARCT) to existing stationary sources, a modification of the permitting program to achieve no net increase in emissions from permitted sources with a potential to emit more than 15 tons per year of O₃ precursor pollutants, consideration of transportation control measures that will reduce vehicle miles travelled, and significant use of low-emission motor vehicles by vehicle fleet operators.

A determination of project consistency with each plan is required to evaluate if a proposed action would interfere with the attainment or maintenance strategy outlined in these documents. A proposed action generally would be consistent with the intent of a plan if project emissions are included in the future emission inventories of the plan.

4.7.3 Baseline Air Quality

The EPA designates all areas of the United States as having air quality better than (attainment) or worse than (nonattainment) the NAAQS. A nonattainment designation means that a primary NAAQS has been exceeded more than three discontinuous times in 3 years in a given area. Pollutants in an area are often designated as unclassified when there is a lack of data for the EPA to form a basis of attainment status. The SFBAAB is in attainment for NO₂, O₃, SO₂ and CO, and unclassified for PM₁₀ (ARB 1994a). Portions of the SVAB (including Butte, Placer, Sacramento, Solano, Sutter, Yolo, and Yuba counties) are in “severe” nonattainment for O₃. All of the SJVAB is designated as in “serious” O₃ nonattainment. CO nonattainment areas of potential concern include the urbanized areas of Sacramento and Yolo counties in the SVAB and the Stockton urbanized area in the SJVAB (all are classified as “moderate” CO nonattainment areas). Sacramento County is in “moderate” nonattainment of the federal PM₁₀ standards and all of the SJVAB is “serious” PM₁₀ nonattainment. NO_x and SO₂ are in attainment throughout the SVAB and SJVAB.

The ARB designates areas of the state as either in attainment or nonattainment of the CAAQS. An area is in nonattainment if the CAAQS has been exceeded more than once in 3 years. At the present time, the SFBAAB is in nonattainment of the CAAQS for O₃ (“serious”)

and PM₁₀; the SVAB is nonattainment for O₃ (“serious”), CO (“serious” - Sacramento urbanized area only), and PM₁₀; and the SJVAB is nonattainment for O₃ (“severe”) and PM₁₀ (ARB 1994a). (Refer to Tables 4.7-2 and 4.7-3 for an explanation of the federal and state nonattainment classification schemes.)

Maximum pollutant concentrations measured at various monitoring stations in the SFBAAB from 1991 through 1993 are provided in Table 4.7-4. Stations were chosen for inclusion in Table 4.7-4 to provide a survey of the background air quality found in the various potential project regions (ARB 1992, 1993a, 1994b). For example, the Redwood City and San Leandro monitoring stations are located in the South Bay portion of the LTMS activity area; the San Francisco station is in the Ocean area; the Oakland and Richmond stations are in the Central Bay area; San Rafael and Vallejo are in the San Pablo Bay area; Benicia, Fairfield, and Pittsburg are in the Suisun Bay area; and Bethel Island and Stockton are in the Delta area. (See Figure 4.1-1 for a description of the regions potentially affected by LTMS activity.)

Concentrations of photochemical smog, or O₃, are highest during the warmer months and coincide with the season of maximum insolation. Inert pollutant concentrations (pollutants other than O₃) tend to be the greatest during the winter months when extended periods of light wind conditions and surface-based temperature inversions occur. The following is a discussion of the various pollutants monitored within the SFBAAB, SVAB, and SJVAB.

Ozone

Ozone is a colorless gas that is formed in the atmosphere by the photochemical reactions of ROG and NO_x. Ozone is a respiratory irritant and can cause damage to lung tissue. Sensitive plant species and synthetic materials can also be damaged by O₃ at concentrations as low as 0.02 ppm. The data in Table 4.7-4 show that the 1-hour NAAQS was exceeded only in the Suisun Bay region at the Fairfield and Pittsburg monitoring stations in 1993. The CAAQS of 0.09 ppm was exceeded several times during the 1991 through 1993 period at various stations in each of the regions except Ocean (as represented by the San Francisco station).

Table 4.7-4. Maximum Pollutant Concentrations Monitored in the Regions Affected by LTMS Activity (1991-1993)
(page 1 of 6)

Pollutant/Region/Monitoring Station	MAXIMUM CONCENTRATION BY YEAR			NUMBER OF DAYS FEDERAL STANDARDS EXCEEDED**			NUMBER OF DAYS STATE STANDARDS EXCEEDED**		
	1991	1992	1993	1991	1992	1993	1991	1992	1993
OZONE (1-hour [ppm])									
South Bay	0.08	0.09	0.10	0	0	0	0	0	1
Redwood City	0.12	0.11	0.12	0	0	0	2	2	3
San Leandro									
Ocean	0.05	0.08	0.08	0	0	0	0	0	0
San Francisco									
Central Bay	0.06	0.08	0.11	0	0	0	0	0	1
Oakland	0.05	0.08	0.12	0	0	0	0	0	2
Richmond									
San Pablo Bay									
San Rafael	0.08	0.07	0.08	0	0	0	0	0	0
Vallejo	0.11	0.10	0.11	0	0	0	2	1	3
Suisun Bay									
Fairfield	0.10	0.10	0.13	0	0	1	3	3	3
Pittsburg	0.08	0.11	0.13	0	0	1	0	3	4
Delta									
Bethel Island	0.11	0.11	0.11	0	0	0	3	7	3
Stockton	0.11	0.11	0.11	0	0	0	10	7	7
NITROGEN DIOXIDE (Annual [ppm])									
South Bay	0.025	0.021	0.022	0	0	0	NA	NA	NA
Redwood City	0.024	0.022	0.024	0	0	0	NA	NA	NA
Ocean									
San Francisco	0.019	0.019	0.020	0	0	0	NA	NA	NA
Central Bay									
Richmond	0.022	0.021	0.021	0	0	0	NA	NA	NA
San Pablo Bay	0.019	0.017	0.016	0	0	0	NA	NA	NA
San Rafael									
Vallejo	0.019	0.018	0.017	0	0	0	NA	NA	NA
Suisun Bay									
Pittsburg	0.018	0.016	0.015	0	0	0	NA	NA	NA
Delta	0.025	0.023	0.024	0	0	0	NA	NA	NA
Bethel Island									
Stockton									

Table 4.7-4. Maximum Pollutant Concentrations Monitored in the Regions Affected by LTMS Activity (1991-1993)
(page 2 of 6)

Pollutant/Region/Monitoring Station	MAXIMUM CONCENTRATION BY YEAR			NUMBER OF DAYS FEDERAL STANDARDS EXCEEDED**			NUMBER OF DAYS STATE STANDARDS EXCEEDED**		
	1991	1992	1993	1991	1992	1993	1991	1992	1993
NITROGEN DIOXIDE (1-hour [ppm])									
South Bay	0.12	0.10	0.09	NA	NA	NA	0	0	0
Redwood City									
Ocean	0.10	0.09	0.08	NA	NA	NA	0	0	0
San Francisco									
Central Bay	0.08	0.08	0.08	NA	NA	NA	0	0	0
Richmond									
San Pablo Bay	0.07	0.08	0.08	NA	NA	NA	0	0	0
San Rafael	0.09	0.07	0.07	NA	NA	NA	0	0	0
Vallejo									
Suisun Bay	0.07	0.08	0.08	NA	NA	NA	0	0	0
Pittsburg									
Delta	0.08	0.07	0.07	NA	NA	NA	0	0	0
Bethel Island	0.11	0.19	0.16	NA	NA	NA	0	0	0
Stockton									
CARBON MONOXIDE (8-hour [ppm])									
South Bay	6.5	4.8	5.8	0	0	0	0	0	0
Redwood City									
Ocean	6.5	7.4	6.9	0	0	0	0	0	0
San Francisco									
Central Bay	6.8	4.6	4.9	0	0	0	0	0	0
Oakland	4.5	4.1	3.8	0	0	0	0	0	0
Richmond									
San Pablo Bay	5.7	5.0	4.0	0	0	0	0	0	0
San Rafael	9.6	6.6	7.9	0	0	0	0	0	0
Vallejo									
Suisun Bay	3.6*	--	--	0	--	--	0	--	--
Fairfield	4.1	3.9	2.8	0	0	0	0	0	0
Pittsburg									
Delta	2.3	3.9	2.0	0	0	0	0	0	0
Bethel Island	11.4	8.3	6.3	1	0	0	0	0	0
Stockton									

Table 4.7-4. Maximum Pollutant Concentrations Monitored in the Regions Affected by LTMS Activity (1991-1993)

(page 3 of 6)

Pollutant/Region/Monitoring Station	MAXIMUM CONCENTRATION BY YEAR			NUMBER OF DAYS FEDERAL STANDARDS EXCEEDED**			NUMBER OF DAYS STATE STANDARDS EXCEEDED**		
	1991	1992	1993	1991	1992	1993	1991	1992	1993
CARBON MONOXIDE (1-hour [ppm])									
South Bay	11.0	12.0	10.0	0	0	0	0	0	0
Redwood City									
Ocean	9.0	10.0	10.0	0	0	0	0	0	0
San Francisco									
Central Bay	9.0	7.0	7.0	0	0	0	0	0	0
Oakland	7.0	5.0	9.0	0	0	0	0	0	0
Richmond									
San Pablo Bay	10.0	8.0	9.0	0	0	0	0	0	0
San Rafael	13.0	11.0	12.0	0	0	0	0	0	0
Vallejo									
Suisun Bay	6.0*	--	--	0	--	--	0	--	--
Fairfield	7.0	5.0	6.0	0	0	0	0	0	0
Pittsburg									
Delta	3.0	5.0	3.0	0	0	0	0	0	0
Bethel Island	14.0	11.0	10.0	0	0	0	0	0	0
Stockton									
SULFUR DIOXIDE (Annual [ppm])									
South Bay	ND	ND	ND	--	--	--	--	--	--
(no data)									
Ocean	0.002*	0.002	0.001	0	0	0	NA	NA	NA
San Francisco									
Central Bay	0.001	0.001	0.001	0	0	0	NA	NA	NA
Richmond									
San Pablo Bay	0.001	0.001	0.001	0	0	0	NA	NA	NA
Vallejo									
Suisun Bay	0.001	0.000	0.001	0	0	0	NA	NA	NA
Benicia	0.002	0.002	0.001	0	0	0	NA	NA	NA
Pittsburg									
Delta	0.001	0.001	0.000	0	0	0	NA	NA	NA
Bethel Island									

Table 4.7-4. Maximum Pollutant Concentrations Monitored in the Regions Affected by LTMS Activity (1991-1993)
(page 4 of 6)

Pollutant/Region/Monitoring Station	MAXIMUM CONCENTRATION BY YEAR			NUMBER OF DAYS FEDERAL STANDARDS EXCEEDED**			NUMBER OF DAYS STATE STANDARDS EXCEEDED**		
	1991	1992	1993	1991	1992	1993	1991	1992	1993
SULFUR DIOXIDE (24-hour [ppm])									
South Bay (no data)	ND	ND	ND	--	--	--	--	--	--
Ocean	0.016*	0.013	0.011	0	0	0	0	0	0
San Francisco									
Central Bay	0.011	0.011	0.012	0	0	0	0	0	0
Richmond									
San Pablo Bay	0.008	0.017	0.010	0	0	0	0	0	0
Vallejo									
Suisun Bay	0.013	0.008	0.009	0	0	0	0	0	0
Benicia	0.015	0.023	0.009	0	0	0	0	0	0
Pittsburg									
Delta	0.008	0.011	0.009	0	0	0	0	0	0
Bethel Island									
SULFUR DIOXIDE (1-hour [ppm])									
South Bay (no data)	ND	ND	ND	--	--	--	--	--	--
Ocean	0.04*	0.04	0.04	0	0	0	0	0	0
San Francisco									
Central Bay	0.03	0.03	0.11	0	0	0	0	0	0
Richmond									
San Pablo Bay	0.02	0.03	0.02	0	0	0	0	0	0
Vallejo									
Suisun Bay	0.04	0.03	0.04	0	0	0	0	0	0
Benicia	0.04	0.10	0.05	0	0	0	0	0	0
Pittsburg									
Delta	0.02	0.03	0.02	0	0	0	0	0	0
Bethel Island									

Table 4.7-4. Maximum Pollutant Concentrations Monitored in the Regions Affected by LTMS Activity (1991-1993)
(page 5 of 6)

Pollutant/Region/Monitoring Station	MAXIMUM CONCENTRATION BY YEAR			NUMBER OF DAYS FEDERAL STANDARDS EXCEEDED**				NUMBER OF DAYS STATE STANDARDS EXCEEDED**			
	1991	1992	1993	1991	1992	1993	1993	1991	1992	1993	1993
PM ₁₀ (Annual [geometric] [$\mu\text{g}/\text{m}^3$])											
South Bay	26.6	24.9	22.9	NA	NA	NA	NA	0	0	0	0
Redwood City	27.6	22.7	18.1	NA	NA	NA	NA	0	0	0	0
San Leandro											
Ocean	29.7	27.6*	25.1	NA	NA	NA	NA	0	0	0	0
San Francisco											
Central Bay	24.4	23.4*	21.3	NA	NA	NA	NA	0	0	0	0
Richmond											
San Pablo Bay	26.4	22.0	21.3	NA	NA	NA	NA	0	0	0	0
San Rafael											
Suisun Bay	ND	ND	ND	--	--	--	--	--	--	--	--
(no data)											
Delta	27.1	22.6	19.4	NA	NA	NA	NA	0	0	0	0
Bethel Island	43.0*	39.9*	32.0*	NA	NA	NA	NA	1	1	1	1
Stockton											
PM ₁₀ (Annual [arithmetic] [$\mu\text{g}/\text{m}^3$])											
South Bay	32.1	28.7	26.4	0	0	0	0	NA	NA	NA	NA
Redwood City	32.4	24.9	20.8	0	0	0	0	NA	NA	NA	NA
San Leandro											
Ocean	34.9	31.6*	28.8	0	0	0	0	NA	NA	NA	NA
San Francisco											
Central Bay	29.1	26.1	25.2	0	0	0	0	NA	NA	NA	NA
Richmond											
San Pablo Bay	30.4	24.5	23.3	0	0	0	0	NA	NA	NA	NA
San Rafael											
Suisun Bay	ND	ND	ND	--	--	--	--	--	--	--	--
(no data)											
Delta	33.4	26.1	23.6	0	0	0	0	NA	NA	NA	NA
Bethel Island	52.5*	44.8*	38.5*	1	0	0	0	NA	NA	NA	NA
Stockton											

Table 4.7-4. Maximum Pollutant Concentrations Monitored in the Regions Affected by LTMS Activity (1991-1993)
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Pollutant/Region/Monitoring Station	MAXIMUM CONCENTRATION BY YEAR			NUMBER OF DAYS FEDERAL STANDARDS EXCEEDED**			NUMBER OF DAYS STATE STANDARDS EXCEEDED**		
	1991	1992	1993	1991	1992	1993	1991	1992	1993
PM ₁₀ (24-hour [$\mu\text{g}/\text{m}^3$])									
South Bay	90	80	76	0	0	0	12/60	7/61	5/61
Redwood City	99	56	84	0	0	0	10/60	2/61	4/65
San Leandro									
Ocean	109	81	69	0	0	0	15/60	9/61	5/61
San Francisco									
Central Bay	97	55	76	0	0	0	9/59	3/61	3/61
Richmond									
San Pablo Bay	115	63	69	0	0	0	10/60	5/61	1/61
San Rafael	ND	ND	ND	--	--	--	--	--	--
Suisun Bay									
(no data)									
Delta	123	73	71	0	0	0	10/60	4/61	6/61
Bethel Island	140	145	104	0	0	0	21/53	18/53	13/58
Stockton									
<p>Notes: NA = Not applicable. ND = No data. * = Data presented are valid, but incomplete in that an insufficient number of valid data points were collected to meet EPA and/or ARB criteria for representativeness. ** = Annual averaging periods are reported as either being exceeded or not being exceeded. PM₁₀ 24-hour standard exceedances are reported as number of exceedances per total number of samples taken. PM₁₀ sampling is not performed on a daily basis.</p> <p>Source: ARB 1992, 1993, 1994.</p>									

Nitrogen Dioxide

Nitrogen dioxide is a reddish-brown gas with an irritating odor. As a product of nitrogen oxides (NO_x), NO₂ is one of the primary pollutants in the formation of photochemical smog. Nearly all NO₂ is emitted from anthropogenic sources such as automobiles and power plants that burn fossil fuels. Health effects associated with NO₂ range from irritation to the eyes, nose, and throat to increased susceptibility to infection. The maximum NO₂ concentrations monitored in the LTMS area are shown in Table 4.7-4. These data show that the 1-hour and annual concentrations were less than 50 percent of their applicable standards at all stations during the monitoring period, with the exception of 1-hour values measured at Stockton (the Delta region) in 1992 and 1993.

Carbon Monoxide

Carbon monoxide is a clear, odorless gas produced by the incomplete combustion of fossil fuels and organic substances. The natural degradation of plant matter can also contribute to the production of CO, but motor vehicles are by far the largest man-made source. The highest ambient CO concentrations usually occur near congested transportation arteries and intersections. Carbon monoxide is not a respiratory irritant, but rather passes through lungs and interferes with the transfer of oxygen in blood. Symptoms of exposure include dizziness, headache, and, in extreme cases, loss of consciousness. Table 4.7-4 shows that the maximum CO levels monitored at all stations within the LTMS area were less than their applicable standards during the monitoring period.

Sulfur Dioxide

Sulfur dioxide is a colorless, nonflammable gas with a pungent odor. SO₂ is a respiratory irritant that is mainly produced from the combustion of sulfur-containing fossil fuels, as a byproduct in the refining of fossil fuels from crude oil, and from the production of sulfuric acid. Marine vessels contribute substantially to SO₂ emissions in the SFBAAB (approximately 14.5 percent of the total from all sources) due to the use of high-sulfur fuels. About one-third of these emissions

occur when vessels operate in harbors and bays and two-thirds occur while vessels cruise along the coast (ARB 1984). The data in Table 4.7-4 show that SO₂ concentrations monitored at stations within the LTMS area were only a small fraction of their applicable standards.

PM₁₀

PM₁₀ is produced by a wide range of activities including natural wind erosion, combustion of fossil fuels, mining, and transporting and handling of minerals. PM₁₀ is of concern because the small particles can pass through the bronchial passages in the lung and into the alveoli where they can be retained indefinitely. If PM₁₀ contains water soluble compounds, the soluble portion can be absorbed and transported through the blood system to other organs where they can cause damage. Table 4.7-4 shows that the maximum PM₁₀ levels monitored in the LTMS area periodically exceeded the 24-hour CAAQS. However, the 24-hour NAAQS and the state and federal annual PM₁₀ standards were not exceeded at any location other than Stockton (the Delta region) during the monitoring period.

4.7.4 San Francisco Bay Area Air Basin Emissions

The total air emissions that occurred within the SFBAAB during 1990 are shown in Table 4.7-5. The SFBAAB emissions inventory is periodically updated for planning purposes to forecast future emissions inventories, to analyze individual control measures, and for input data to regional air quality modeling. The 1990 inventory represents the most current emissions data available for the SFBAAB (BAAQMD 1993). Table 4.7-5 shows that one of the largest contributors to air pollutants in the SFBAAB are mobile sources. On-road motor vehicles account for approximately 46 percent of the ROG, 70 percent of the CO, 45 percent of the NO_x, and 18 percent of the SO₂ emitted in the SFBAAB. Total emissions from each of the counties within the SFBAAB that would be affected by the LTMS program, and the two counties that would be the primary areas affected in the SVAB and SJVAB (Sacramento County and San Joaquin County), are also shown in Table 4.7-5.

**Table 4.7-5. 1990 Emission Inventory for the San Francisco Bay Area Air Basin
(tons/day)**

<i>Emission Source</i>	<i>TOG</i>	<i>ROG</i>	<i>CO</i>	<i>NO_x</i>	<i>SO_x</i>	<i>PM₁₀</i>
Petroleum Process, Storage, and Transfer	37.4	32.1	6.6	42.9	47.3	2.9
Chemical Manufacturing Processes	397.4	23.3	27.6	3.0	8.7	146.6
Organic Compounds Evaporation	145.5	139.1	—	—	—	—
Combustion	16.5	7.3	76.4	99.7	9.5	10.6
Off-Highway Mobile Sources	68.5	63.1	647.6	143.9	28.3	8.1
Aircraft	18.4	18.1	70.8	15.4	0.5	2.7
Motor Vehicles	323.3	299.5	1,966.5	250.6	21.1	23.5
Miscellaneous Emission Sources	99.8	69.3	—	—	—	341.6
TOTAL — BAY AREA AIR QUALITY MANAGEMENT DISTRICT	1,110	652	2,800	557	116	536
TOTAL — ALAMEDA COUNTY	238	141	612	114	15.1	103
TOTAL — CONTRA COSTA COUNTY	192	116	447	140	55.7	85.5
TOTAL — MARIN COUNTY	44.8	26.6	137	18.5	1.4	27.5
TOTAL — NAPA COUNTY	23.9	14.7	67.9	10.2	0.8	14.2
TOTAL — SAN FRANCISCO COUNTY	69.4	59.2	235	42.9	10	38.8
TOTAL — SAN MATEO COUNTY	136	68.8	313	53.9	3.9	61
TOTAL — SANTA CLARA COUNTY	287	154	704	120	10	137
TOTAL — SOLANO COUNTY	58.7	39.4	130	31.2	16.7	29
TOTAL — SONOMA COUNTY	58.7	32.6	159	26.7	2.2	40.2
TOTAL — SACRAMENTO COUNTY	210	100	480	88	7.8	130
TOTAL — SAN JOAQUIN COUNTY	85	75	290	64	12	93

Sources: BAAQMD 1993 — For all values except Sacramento and San Joaquin counties. Values are 1990 summer average emissions reported as rounded in the 1990 Emission Inventory Summary Report document.
ARB 1991 — For Sacramento and San Joaquin counties values. Values are 1989 annual average emissions reported as rounded in the 1989 Emission Inventory document.

4.8 REGULATORY ENVIRONMENT

The federal and state regulatory agencies participating in the LTMS effort are the U.S. Environmental Protection Agency (EPA), the U.S. Army Corps of Engineers (COE), the San Francisco Bay Conservation and Development Commission (BCDC), the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) and the State Water Resources Control Board (SWRCB). The five cooperating agencies in the LTMS each have unique organizational characteristics as they are charged with implementing different bodies of state and federal law. Policies developed through this analysis must not be inconsistent with these bodies of law.

This section first describes the legal and policy environment within which the LTMS agencies operate, then the specific activities of each cooperating agency as they relate to dredging and material disposal within the Planning Area.

4.8.1 Existing Laws and Policies Governing Dredged Material

A number of major laws and policies govern the disposal of dredged material within the Planning Area. These are outlined in the following section, beginning with an international agreement, followed by federal, state, and local laws and policies.

4.8.1.1 International Treaties

The major international agreement affecting dredging is related specifically to ocean disposal of dredged material. An agreement developed by the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matters (26 UST 2403: TIAS 8165), also known as the London Dumping Convention (LDC), became effective on August 30, 1975, after ratification by the participating nations including the United States. The criteria from the LDC has been incorporated into the Marine Protection, Research, and Sanctuaries Act (MPRSA) assuring compliance via federal law.

4.8.1.2 Federal Laws

Rivers and Harbors Act of 1899, Section 10

This Act authorizes the COE to regulate virtually all obstruction to navigation within the navigable waters of the United States. Virtually all dredging projects must comply with this Act and therefore require a Section 10

permit, however the COE does not issue Section 10 permits to itself for federally authorized projects.

Water Resources Development Acts

The legislation that governs the conduct of the Corps of Engineers' Civil Works program consists of numerous separate enactments of Congress. The work of preparing and considering such legislation is done largely in the Senate Committee on Environment and Public Works and the House Committee on Transportation and Infrastructure. Study authorizations are either unique, study-specific authorities; or standing, program authorities, and are contained in public laws governing water resources, primarily the Water Resources Development Act (WRDA). This legislation seeks to specifically authorize those projects that meet the nation's need to support commercial navigation, reduce flood damages due to hurricanes and storms, and to restore and protect the environment.

WATER RESOURCES DEVELOPMENT ACT OF 1986. The Water Resources Development Act of 1986 establishes new requirements for non-federal interests regarding cost-sharing for harbor construction and maintenance and for flood control and other purposes. It also allows non-federal interests to undertake navigation studies, consistent with COE regulations, and submit them to the Secretary of the Army for transmittal to Congress. Another provision of the law allows non-federal interests to levy tonnage duties or fees on vessels using improved harbors to finance the non-federal share of project improvements. The Act also established the Harbor Maintenance Trust Fund in the U.S. Treasury by amending the Internal Revenue Code of 1954.

WATER RESOURCES DEVELOPMENT ACT OF 1992. The Water Resources Development Act of 1992 authorizes the Secretary of the Army to carry out projects for the protection, restoration, and creation of aquatic and ecologically related habitats, including wetlands, in connection with dredging for construction, operation, or maintenance of an authorized navigation project in certain circumstances. In addition, any such project would require a cooperative agreement with a local sponsor which would include, among other things, cost-sharing requirements.

WATER RESOURCES DEVELOPMENT ACT OF 1996. The Water Resources Development Act of 1996 revises and clarifies cost sharing for dredged material disposal facilities. Section 201 states that land-based and aquatic dredged material disposal facilities for construction and O&M will now be considered general navigation

features and cost shared in accordance with Title I of WRDA '86. Section 601 provides that the Harbor Maintenance Trust Fund will be the source of the federal portion of funds for construction of dredged material disposal facilities for O&M. Section 207 allows the Assistant Secretary of the Army to select disposal methods that are not the least cost option if incremental costs are reasonable in relation to the environmental benefits including creation of wetlands and shoreline erosion control. Section 217 allows for the design and use of excess capacity in authorized dredged material disposal facilities at the request and expense of a non-federal interest.

Water Resources Planning Act of 1965

This Act creates the Water Resources Council (WRC) and outlines its purposes and duties concerning development of planning principles and guidelines. A subsequent document, *Economic and Environmental Principles for Water and Related Land Resources Implementation Studies* (March 10, 1983), published by the WRC, references this Act. This document describes the federal objective for water and related land resources project planning as that project which contributes to national economic development consistent with protecting the Nation's environment, pursuant to national environmental statutes, applicable executive orders, and other federal planning requirements. Contributions to national economic development (NED) are increases in the net value of the national output of goods and services, expressed in monetary units. Contributions to NED are the direct net benefits that accrue in the planning area and the rest of the Nation. Contributions to NED include increases in the net value of those goods and services that are marketed, and also of those that may not be marketed. The federal standard is the equivalent of NED for maintenance projects in that it denotes the level of maintenance at which the improved net value of the project is preserved.

National Environmental Policy Act of 1969 (42 U.S.C. 1251 et seq.)

The National Environmental Policy Act (NEPA) affects federally authorized projects and was established to ensure that federal projects or decisions incorporate considerations of environmental consequences into the decision making process. NEPA establishes a process for input by affected parties through public noticing and scoping. This input is considered when analyzing a reasonable range of alternatives in the document, either an Environmental Assessment (EA) or Environmental

Impact Statement (EIS). For dredging projects, the federal lead agency, typically the COE, is responsible for NEPA compliance.

Clean Water Act of 1972 (33 U.S.C. 1252 et seq.)

The Clean Water Act (CWA) was enacted to restore and maintain the chemical, physical, and biological integrity of the Nation's waters through the elimination of discharges of pollutants. Among other things, the CWA provided that continuing (point-source) pollutant discharges could not occur unless specifically authorized by permit, and it established permit programs for various forms of discharges, including the discharge of dredged materials. The main sections of the CWA that apply to dredging and dredged material disposal are Sections 401 and 404.

CWA SECTION 401. The Act requires Section 401 Certification that the permitted project complies with state water quality standards for actions within state waters or federal water quality criteria for offshore waters. The State is required to establish water quality standards for all state waters including the territorial sea under Section 301 of the CWA. Compliance with Section 401 is provided by approval of a Water Quality Certification or waiver from the State and Regional Water Quality Control Boards (SWRCB and RWQCBs), and is a condition for issuance of a Section 404 permit discussed below.

CWA SECTION 404(b)(1). This section of the CWA addresses permits for dredged or fill material. It establishes guidelines for the discharge of dredged or fill materials and for the prevention of such discharges, individually or in combination with other activities, from having unacceptable adverse impacts to the ecosystem.

The COE has the legal authority to regulate, through the issuance of a Section 404 permit, the discharge of dredged or fill material in inland waterways, wetlands, and territorial seas. The COE must also provide notice and opportunity for public hearings. This Section also requires EPA to develop guidelines (the "404(b)(1) Guidelines," published separately at 40 CFR Part 230) that the COE must follow in evaluating and issuing permits for the discharge of dredged or fill material. Although this Section specifically applies to applications for federal permits, and the COE does not issue itself permits, the COE policy is to apply the EPA guidelines to their projects as well.

The 404(b)(1) Guidelines include environmental criteria

for determining whether a proposed discharge may have unacceptable adverse effects, and also establishes that aquatic disposal may not be permitted if a non-aquatic disposal alternative is practicable. Sediment testing (i.e., consistent with the recently released Inland Testing Manual [USEPA/USACE 1998]) is one aspect of determining whether a proposed discharge of dredged material is environmentally acceptable; however, other considerations (including the availability of practicable alternatives) also separately apply. In addition, no permit for the discharge of dredged material into waters of the U.S. may be issued if it would violate applicable state water quality criteria or federal water quality standards.

Clean Air Act as Amended (42 U.S.C. Section 7401 et seq.)

The Clean Air Act (CAA) is intended to protect air quality by regulating emissions of air pollutants and applies to dredging projects disposing of dredged material onshore and within the territorial sea. The CAA requires compliance with state and local requirements and prohibits federal agencies from engaging in non-conforming activities.

Marine Protection, Research and Sanctuaries Act of 1972 (also known as the Ocean Dumping Act) (33 U.S.C. 1401 et seq.)

The Marine Protection, Research, and Sanctuaries Act (MPRSA) is the United States' implementation of an international treaty, the Convention on the Prevention of Marine Pollution by Dumping of Waste and Other Matter (also known as the "London Convention"). The MPRSA requires EPA to establish criteria for reviewing and evaluating permits for disposal of material in ocean waters. It requires permits for the disposal of some wastes (such as dredged material), and prohibits the disposal of some wastes entirely (including radioactive wastes, and chemical and biological warfare materials). The main sections of the MPRSA that apply to dredging and dredged material disposal are Sections 102, 103, and 104.

MPRSA SECTION 102. The Act authorizes EPA to establish criteria for evaluating all dredged material proposed for ocean dumping. These criteria are published separately in the Ocean Dumping Regulations at 40 CFR Part 220-228. The ocean dumping regulations describe when dredged material may be disposed at an ocean dredged material disposal site (ODMDS), and when it may not. For example, dredged material containing certain chemical contaminants at other than trace levels are prohibited

from disposal. "Trace contaminants" are, in turn, defined as materials that will not cause significant undesirable effects, as measured by bioassay test procedures acceptable to EPA and the COE (the accepted bioassay procedures are published in the testing manual known as the Green Book [USEPA/USACE 1991]).

Section 102 also authorizes EPA to designate permanent ODMDS. ODMDS designations are made in accordance with specific site selection criteria designed to minimize the adverse effects of ocean disposal of dredged material (for example, by avoiding sensitive habitat areas, sanctuaries, etc., to the maximum extent practicable). EPA recently designated an ODMDS approximately 50 nautical miles offshore of the Golden Gate, SF-DODS.

MPRSA SECTION 103. The Act authorizes the COE to issue Section 103 permits, subject to EPA concurrence or waiver, for dumping dredged materials into the ocean waters. It requires public notice, opportunity for public hearings, compliance with criteria developed by the EPA (unless a waiver has been granted), and the use of designated sites whenever feasible. Although the COE does not issue itself permits, the COE and EPA apply these standards to COE projects as well. The COE cannot issue a Section 103 permit unless EPA concurs, concurs with conditions, or issues a waiver for the proposed project.

MPRSA SECTION 104. Section 104 establishes the authority for EPA and the COE to require permit conditions addressing virtually any aspect of ocean disposal operations that may relate to environmental effects, such as the type and volume of material discharged, the timing and location of discharge, and surveillance and monitoring.

Coastal Zone Management Act of 1972 and subsequent 1990 Amendments (16 U.S.C. 1456 et seq.)

This Act provides for the development and implementation of coastal management programs by the states. BCDC's coastal management program for the Bay, which was approved in 1977, is based on the provisions and policies of the McAteer-Petris Act, the Suisun Marsh Preservation Act of 1977, the San Francisco Bay Plan, the Suisun Marsh Protection Plan, and its administrative regulations. Under the CZMA, federal agencies are required to carry out their activities and programs in a manner consistent with BCDC's coastal management program. To implement this provision, federal agencies make *consistency determinations* regarding proposed federal activities

while applicants for federal permits or licenses, or federal financial assistance make *consistency certifications*. The BCDC reviews these determinations and certifications, and either concurs or objects based on a proposal's consistency with its laws and policies.

Fish and Wildlife Coordination Act of 1958 (16 U.S.C. 661 et seq.)

This Act requires the federal lead agency for a dredging project to consult with and consider the recommendations of the U.S. Fish and Wildlife Service (USFWS), the California Department of Fish and Game (CDFG) (in California) and, for projects affecting marine fisheries, with the National Marine Fisheries Service (NMFS). The Act is applicable to COE and EPA evaluation of CWA Section 404 and MPRSA Section 103 permits.

Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)

This Act protects federally listed and proposed threatened and endangered species. Consultation with and an opinion statement from USFWS and NMFS are required under Section 7 of this Act. Section 7(a) further prohibits federal agencies from jeopardizing listed and proposed species, and it requires federal agencies to implement conservation programs for listed species. Section 9 of the Act prohibits the taking of listed species without authorization from the USFWS or NMFS.

Marine Mammal Protection Act of 1972 (16 U.S.C. 1361 et seq.)

This Act prohibits taking or harassment of any marine mammals except incidental take during commercial fishing, capture under scientific research and public display permits, harvest by native Americans for subsistence purposes, and any other take authorized on a case-by-case basis as set forth in the act. The Department of the Interior, Fish and Wildlife Service, is responsible for the polar bear, sea otter, marine otter, walrus, manatees, and dugong, while the Department of Commerce, National Marine Fisheries Service, is responsible for all other marine mammals.

National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq.)

This Act is intended to protect historic and prehistoric resources from impacts by federal projects and requires

consultation (under Section 106) with the State Historic Preservation Officer (SHPO).

Farmland Protection Policy Act of 1984

The purpose of this Act is to minimize contributions to the unnecessary and irreversible conversion of farmland to non-agricultural uses by federal agencies. Restoration of historic diked baylands or dredged material placement on uplands currently in agricultural uses or under agricultural preserve status (such as the Williamson Act) require coordination with the Soil Conservation Service.

4.8.1.3 State Laws and Policies

California Environmental Quality Act of 1973 (P.R.C. 21000-21177)

The California Environmental Quality Act (CEQA) contains requirements similar to NEPA and requires the preparation of an Environmental Impact Report (EIR) prior to implementation of applicable projects. CEQA requires significant impacts to be mitigated to a level of insignificance or to the maximum extent feasible. The state or local lead agency is responsible for CEQA compliance.

Porter-Cologne Water Quality Control Act of 1966 (C.W.C. Section 13000 et seq.; C.C.R. Title 23, Chapter 3, Chapter 15)

This Act is the primary state regulation addressing water quality, and waste discharges (including dredged material) on land. The Act's requirements are implemented by the State Water Resources Control Board (SWRCB) at the state level, by the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) in the Bay Area, and by the Central Valley Regional Water Quality Control Board (CVRWQCB) in the Delta. The dividing line between the SFBRWQCB and the CVRWQCB is in the vicinity of Chipps Island in Suisun Bay. Additionally, the SWRCB requires a Permit to Appropriate Water for actions including diversion of surface waters to non-riparian land or for seasonal storage of unappropriated surface waters.

California Endangered Species Act of 1984 (Fish and Game Code Section 2050 et seq.)

This Act provides for recognition and protection of rare, threatened, and endangered plants and animal species. The Act requires state agencies to coordinate

with the CDFG to ensure that state authorized/funded projects do not jeopardize a listed species. The Act prohibits the taking of a listed species without authorization from the CDFG.

McAteer-Petris Act

The McAteer-Petris Act, first enacted in 1965, created the San Francisco Bay Conservation and Development Commission to prepare a plan to protect the Bay and shoreline and provide for appropriate development and public access. The McAteer-Petris Act directs the Commission to issue or deny permit applications for placing fill and extracting materials, including dredged material, or changing the use of any land, water, or structure within its jurisdiction, which includes the Bay, shoreline band, saltponds, managed wetlands, and certain waterways. Such permits are issued or denied in accordance with the provisions of the McAteer-Petris Act and Suisun Marsh Preservation Act, and the policies of the *San Francisco Bay Plan* and the *Suisun Marsh Protection Plan*. The shoreline development aspect of the McAteer-Petris Act ensures that prime shoreline sites are reserved for priority uses, such as ports, water-related industry, airports, wildlife refuges, and water-related recreation. The Act also ensures that public access to the Bay is provided to the maximum extent feasible for each development project, and that shoreline development projects are designed in an attractive and safe manner. Under the federal Coastal Zone Management Act, federal agencies are required to carry out their activities and programs in a manner consistent with BCDC's coastal management program.

California Wetlands Policy

This state policy recognizes the value of marshlands and wetlands. The California Resources Agency and the departments within that agency do not authorize or approve projects that fill or harm any type of wetlands. Exceptions may be granted for projects meeting all the following conditions: the project is water dependent; there is no other feasible alternative; the public trust is not adversely affected; and the project adequately compensates the loss.

State Lands Commission Policies

California became a state on September 9, 1850, and thereby acquired nearly 4 million acres of land underlying the state's navigable and tidal waterways. Known as "sovereign lands," these lands included the beds of rivers, streams, and sloughs; non-tidal lakes; tidal navigable bays and lagoons; and tide and submerged lands adjacent to the

entire coast and offshore islands of the state from mean high tide line to 3 nautical miles offshore. These lands are managed by the California State Lands Commission (SLC). The state's interest in these lands consists of sovereign fee ownership, or a Public Trust easement implicitly retained by the state over sovereign lands sold into private ownership. They can only be used for public purposes consistent with the provisions of the Public Trust, such as fishing, water dependent commerce and navigation, ecological preservation, and scientific study. Use of these lands, including dredging and dredged material disposal activities, may require written authorization from the SLC. Many of the alternative project components under consideration are subject to the jurisdiction of the SLC. Therefore, coordination with the SLC will be fulfilled when required for a specific project. In addition, the SLC reviews dredging projects for compliance with CEQA. Public and private entities may apply to the SLC for leases or permits on state lands for many purposes including dredging.

Early in its history, the California Legislature statutorily transferred certain tide and submerged lands in trust to cities and counties, which were then required to develop harbors to further state and national commerce. For those grants where minerals were reserved to the state, a dredging lease is required by the SLC (P.R.C. 6001-6706). In some cases, the state legislature has granted, by statute, administration of the state's interests in filled and unfilled tidelands and submerged lands to local agencies. In these cases, SLC retains an oversight role. Most of the alternative project components under consideration have the potential for affecting sovereign lands, including disposal at in-Bay sites as well as upland/wetland/reuse options, and thus would be subject to the jurisdiction of the SLC. Therefore, coordination with the SLC would be necessary.

4.8.2 Description of the Permitting Framework and Process

Since the LTMS was initiated in 1990, the LTMS agencies have adopted several measures to improve the regulatory process. First, the agencies agreed on the order in which the permit applications should be processed as well as other measures to reduce interagency procedural conflicts. Second, in order to resolve many of the concerns regarding past testing requirements, the agencies prepared improved, consistent interim guidelines for testing of dredged material proposed for in-Bay disposal. These guidelines are contained in COE Public Notice (PN) 93-2. The agencies also agreed to conduct extensive informal

coordination on permit applications and implement consensus solutions to problems, including beneficial reuse of dredged material whenever possible. As a result, a coordinated permit process for dredging is being developed that will provide for the streamlined processing of routine dredging permit applications in the region.

The following section describes the current permit application process. It is important to note that a more streamlined permit process will not, in and of itself, allow for the full implementation of any of the alternative long-term approaches evaluated in this EIS/EIR. The action alternatives' larger target volumes for upland or wetland reuse (especially those of Alternatives 2 and 3) would be difficult to fully achieve under existing agency authorities and cost sharing requirements. In Chapter 7, the EIS/EIR includes a preliminary discussion of the kinds of steps that could be taken in the future — including some that are outside the agencies' control — to more fully achieve the long-term beneficial reuse goals of any of the alternatives. However, project-specific decisions (permits or other project authorizations) at any time must be based on the relevant regulatory provisions in place at that time. Following completion of the EIS/EIR, the LTMS agencies will develop a detailed Management Plan that implements the selected alternative to the greatest extent possible consistent with existing laws, regulations, and agency authorities. The Management Plan would be updated in the future as environmental conditions or the agencies' authorities and regulations change.

4.8.2.1 Current Application Process

An applicant begins the permit process by preparing information that describes the location of the project, volume of material that needs to be removed, historical data on the types and quality of sediment removed from that site, and the proposed disposal location. The applicant then contacts one of the permitting agencies (presently, there is no single point of contact for initiating the application process with all agencies). The agencies then review the basic information provided by the applicant and determine what level and type of sediment tests are appropriate for the project's size, location, characteristics, and potential for contamination. Applicants are then directed to prepare a sampling and analysis plan of appropriate scope and detail.

Most applicants propose in-Bay disposal and test accordingly (as per PN 93-2 as discussed in more detail in Chapter 3). Under the current permit process,

additional testing is required for ocean disposal (as described in USEPA and USACE 1991) and upland/wetland reuse (SFBRWQCB Interim Sediment Screening Criteria) when initial tests indicate the sediment is not suitable for in-Bay disposal or when there is insufficient capacity at in-Bay sites.

Applicants submit the testing data to the agencies that have the regulatory authority over the proposed disposal location as described in the sections below. These agencies will review the testing data and determine whether the results are acceptable and whether the material is suitable for disposal at the proposed location. If the testing was improperly performed or other problems invalidated the results, then the agencies will require retesting. If all or some of the material is judged to be unsuitable for disposal based upon the test results, the applicant can either defer dredging, test for disposal at a different environment (for example a landfill), or conduct more intensive testing to better determine the areal extent or nature of the contamination/toxicity. (In very rare situations if the material is determined to be a hazardous waste or the RWQCB [Regional Board] determines it to pose an unacceptable threat to water quality, then the owner will be required to remove the material to an approved location). The final stages of the permit process depend on the disposal site(s) and are described in more detail below.

In-Bay Disposal

If disposal is proposed in or near the Bay, the applicant first fills out a COE permit application. Applicants must check with the State Lands Commission (SLC) to determine whether a SLC lease is required. If so, the SLC application must also be filled out. Once the COE determines that an application is complete, it prepares a public notice for the proposed project.

The applicant also requests Regional Board certification or waiver indicating that the proposed project will meet water quality standards, and applies for a BCDC permit. The Regional Board lists certifications for approval at its monthly meetings, but conducts public hearing only on projects that staff determines require consideration by the Board or that are controversial. The actual certification is issued by the SWRCB (State Board) with any appropriate permit conditions.

Once the Regional Board takes action on the water quality certification, the BCDC permit application can be filed. Major permits require preparation of staff summaries and recommendations, public hearings

before the Commission, and a Commission vote on applications. However, BCDC's regulations allow most maintenance dredging and smaller new work projects to be authorized administratively. Proposed administrative permit actions are listed and are processed as major permits requiring public hearings if the BCDC Executive Director determines that the project does not qualify for administrative processing or the Commission objects to administrative processing. BCDC can issue a permit for part or all of the proposed project and include permit conditions. The SLC uses a similar consent calendar approach for most dredging lease applications. The USFWS, the NMFS, and state resource agencies provide comments as part of each of the COE's and the state agencies' public review processes.

Although EPA does not itself issue permits for in-Bay disposal, the EPA participates in the entire permit process from pre-application consultation to post-project enforcement. EPA's review of proposed in-Bay disposal projects is primarily implemented through the CWA Section 404 process administered by the COE. The EPA assists applicants on technical matters regarding sediment sampling and analysis, provides comments to the COE and the state regarding the acceptability of the proposed action, recommends appropriate special conditions on permit issuance, and can object to permit issuance under certain conditions.

After circulation of the public notice, the COE directs the applicant to respond to any issues and concerns that have been submitted by other agencies or the public. All outstanding issues must be resolved, water quality certifications (or formal waivers of these certifications) must be issued by the Regional and State Boards, and a permit from BCDC is required prior to issuance of the COE permit.

Although the existing process implies a sequential process for agency review of applications, much of the actual review occurs concurrently. Agency staffs spend extensive time informally coordinating their review of applications. However, even with such coordination, permit processing often requires varying periods of time, may contain different special conditions, and can be enforced independently.

Ocean Disposal

If the proposed disposal is to the ocean, then no approval is required from the state. This is because the ocean disposal site designated by EPA is outside state waters. However, permits are still required for the

dredging from BCDC and potentially from the Regional Board. The COE will process the dredging application in a manner similar to that for in-Bay disposal, but subject to the requirements of the MPRSA rather than the CWA. In this case, the EPA must actively concur that material is suitable for ocean disposal for a permit to be issued. Sediment suitability is determined in accordance with the evaluation guidelines in USEPA and USACE (1991).

Upland/Wetland Reuse (UWR) Disposal or Reuse

Requirements for UWR projects differ from those for open water disposal. In most locations, a Regional Board permit for discharge of waste to land will be required. An additional permit will be required from BCDC if the disposal site is within 100 feet of the Bay or Suisun Marsh. A BCDC permit would be needed if a disposal site were located within the shoreline band or Suisun Marsh, as noted, as well as within other areas of its jurisdiction (e.g., the Bay, salt ponds, managed wetlands, etc.). Further permits will also be required if the proposed disposal site is a wetland; in these cases, a COE permit under CWA Section 404 will be required with full EPA involvement and the requirement for Regional Board water quality certification. COE CWA applications for disposal in wetlands are handled much differently from permits for disposal at designated open water sites and involve, among other things, a wetlands jurisdictional determination and a 404(b)(1) alternatives analysis for each permit application.

In addition to these requirements, most UWR projects are subject to additional state and local controls. The Integrated Waste Management Board (IWMB) may become involved, particularly if the material is taken to a landfill. However, its regulations are mostly implemented through local governments. Approval will be required by local government, based on consistency with applicable General Plans, Specific Plans, zoning, and applicable health and safety codes. In most instances, a use or grading permit will be required. If the material is to be taken to a landfill, either as a waste or building material, then the material must meet the requirements of the landfill. Landfill requirements vary considerably, but all must meet the standards promulgated by the IWMB.

Projects in the Sacramento-San Joaquin Delta are regulated by the Sacramento District of the COE on the federal level, and by the Central Valley Regional Board on the state level.

In all cases, the applicant must follow the requirements of CEQA and NEPA. Routine maintenance dredging is usually categorically exempt from the provisions of CEQA. The USFWS and the NMFS, in addition to commenting to the other agencies, will also require consultation under the ESA if any threatened or endangered species may be affected by the proposed project. The California Department of Fish and Game (CDFG) has a similar role under the state Endangered Species Act. A Fish and Game permit is required if the project would result in streambed alteration.

4.8.2.2 COE Projects

Dredging of areas maintained by the COE under congressional authorization is not subject to many of the provisions discussed above. For example, the COE does not need to obtain a permit from itself for disposal projects authorized by Congress. However, it is supposed to meet the same substantive requirements as required by its permitting authority. There is continuing controversy as to whether the COE needs to obtain state permits for disposal projects that would affect water quality; however, the COE must receive water quality certification from the Regional Board and consistency certification from BDCD. The consistency certification requirements and process differ substantially from the permit process; for example, conditions cannot be placed on consistency certifications. No local permits are needed if the COE constructs an authorized UWR project, but local sponsors must obtain any state or local permits if they provide UWR sites for use by the COE for authorized projects.

4.8.3 Process for Material that is Unacceptable for Aquatic Disposal

Approvals and permits required to operate as a disposal site for contaminated dredged material may include, but are not limited to, the following:

- Individual Section 401 water quality certification for the effluent discharge at the disposal site, from the RWQCB.
- Waste Discharge Requirements for the placement of dredged material, from the RWQCB.
- A Solid Waste Facilities permit, if temporary dredged material holding basins are constructed, from the IWMB.
- A Section 10 and/or 404 permit for impacts to navigation or the discharge of dredged or fill material into waters of the United States (including wetlands), from the COE.
- A Section 106 consultation under the National Historic Preservation Act if the project may impact cultural resources. This consultation will occur through the COE's permit process. The COE is responsible for completing the 106 process, with the applicant's participation.
- A Section 7 consultation (formal or informal) under the Endangered Species Act for identifying and assessing potential impacts to endangered species. This consultation will occur through the COE's permit process.
- A permit from the BDCD for work within the 100-foot shoreline band around San Francisco Bay, in the Suisun Marsh, or in other managed San Francisco Bay wetlands, salt ponds, or certain waterways.
- A Section 1603 or 1604 Streambed Alteration Agreement from the CDFG.
- A permit or lease for lands in which the state holds a property interest and to ensure disposition and/or use of those properties, from the SLC.
- Approval over lands in which the state holds a property interest and to ensure proper disposition and/or use of those properties, from the Department of Health Services.
- Approval for the portion of the project that relates to assessing and ensuring the safety of levees, from the State Water Resources Board.
- Approval to ensure structural safety of dams and approval of construction or enlargement of dams and reservoirs, from the State Department of Safety of Dams.
- A permit to establish requirements for air emission from equipment to be used during operation at the site, as necessary, from the Bay Area Air Quality Management District.
- Approvals from local city and county planning departments as appropriate (e.g., general plan amendments, zoning ordinances, etc.).

CHAPTER 5.0 POLICY-LEVEL MITIGATION MEASURES AND ALTERNATIVES DEVELOPMENT

This chapter presents a discussion of the policy-level mitigation measures developed by the LTMS agencies to address the potential adverse environmental impacts within the three disposal/reuse environments (see Chapter 4). These policy-level mitigation measures would be implemented on a programmatic level and would be common for the range of dredged material reuse/disposal alternatives presented in the alternatives development section of this chapter. This chapter also presents a programmatic analysis of air quality impacts, pursuant to the federal Clean Air Act.

5.1 POLICY/PROGRAM-LEVEL MITIGATION MEASURES

The resources that may be affected by dredged material disposal in each of the three environments (in-Bay, ocean, and upland/wetland reuse [UWR]) are protected by a number of existing agency policies and new policy-level mitigation measures developed for this EIS/EIR. This chapter summarizes those measures that the LTMS agencies are taking or will take to ensure that potentially significant environmental impacts will not occur as a result of dredged material disposal, regardless of which alternative is selected as the preferred approach.

Generally, mitigation measures are presented in a typical EIS/EIR to reduce the potential impact of a project from a level that may be significant to a level that is less than significant. The policy-level mitigation measures contained in this Policy EIS/Programmatic EIR serve a similar function. However, policy-level mitigation measures differ from project-specific mitigation measures in two important ways. First, they address potential adverse impacts on a broad, regional and cumulative level. In this regard, they help direct how and when site-specific measures are needed to avoid or mitigate potential impacts, but they do not replace the need for site-specific mitigation measures. Second, policy-level measures are included in this EIS/EIR as a basic aspect of each of the alternatives to help pro-actively avoid impacts. Therefore, the policy-level mitigation measures effectively reduce the number of resources and pathways that could theoretically be of concern so that the subsequent alternatives analysis focuses on those resources that are most likely to be affected by dredged material management activities.

The policy-level mitigation measures presented in this chapter fall into three main categories. The first category includes overall policies that are independent of the placement environment or type of disposal or

reuse. For example, general policies related to sediment suitability (quality) and site management and monitoring fall into this category. The second category includes policy-level mitigation measures that apply to specific placement environments (ocean, in-Bay, and upland/wetland reuse). The third category of policy-level mitigation measures are those that apply to individual types of disposal or reuse such as wetland restoration or landfill use. The following sections discuss the policy-level mitigation measures in each of these three categories.

5.1.1 Mitigation Measures that Generally Apply to Dredged Material Disposal and Reuse

The general policies described in this section apply to management of dredged material proposed for disposal or reuse in any of the three placement environments, at any type of site. Additional specific measures that apply to individual placement environments, or to specific kinds of disposal or reuse, are presented in subsequent sections.

5.1.1.1 Material Suitability and Sediment Quality Testing

Chapter 3 provides extensive background information about the behavior of sediment contaminants when the sediments are managed in different placement environments. In particular, each placement environment has a specific set of potential “contaminant exposure pathways” through which adverse effects to environmental quality or human health may occur. However, there are appropriate reliable control measures that address many of the potential contaminant exposure pathways in each placement environment. The most important measure is to ensure that dredged material is only placed in specific sites where the number of potential exposure pathways are minimized — for example, by avoiding areas above drinking water aquifers that could be affected by leachate from upland dredged material disposal sites, or avoiding placing new rehandling facilities adjacent to land uses or populations that would be impacted by dust or odors that might be generated by the operations. However, all potential impacts cannot be avoided entirely at all sites, and some dredged material is sufficiently contaminated to require special management. Therefore, appropriate design and operational control measures must be included at different kinds of disposal or reuse sites, and sediment quality testing must be appropriate to address the

concerns (exposure pathways) inherent at the proposed placement site(s).

To ensure that dredged material placed or disposed at any site will not cause unacceptable contaminant-related effects, the LTMS agency will adopt the following general policies:

- *The LTMS agencies will evaluate proposals for new dredged material placement or disposal sites, consistent with alternatives analysis requirements of state and federal laws (e.g., CEQA, NEPA, and CWA).*
- *For any particular site, the LTMS agencies will address all of the relevant contaminant exposure pathways of concern (as described in Chapter 3 of this EIS/EIR and in other agency guidance documents as appropriate) as part of the environmental assessment.*
- *The LTMS agencies will include specific conditions in authorizations for dredged material disposal or reuse sites that stipulate appropriate design or operational features necessary to control all contaminant pathways identified as being of concern at a given site. Control measures will be adequate to manage the worst-case material that would be considered for placement at a specific site.*
- *Only dredged material determined by the LTMS agencies to be suitable for the proposed placement or disposal option will be authorized for such placement or disposal. The LTMS agencies will require that sediments are adequately characterized for the proposed placement environment or specific disposal site, using appropriate physical, chemical, and biological testing methods, as necessary. Sediment quality evaluations will include consideration of potential effects related to the specific pathways of concern identified for the proposed placement environment or disposal site.*

5.1.1.2 Site Management and Monitoring

Dredged material disposal or placement may cause adverse effect through physical, as well as chemical or toxicological, processes. In general, dredged material disposal sites must be actively managed and/or monitored to confirm that the site is performing as predicted, that its capacity is not being exceeded, and that unauthorized use of the site is not occurring. In addition, an important aspect of ongoing management at

any site is the periodic review of monitoring information to determine whether specific site use parameters may need adjustment to ensure that unacceptable or unanticipated impacts do not occur. The LTMS agencies will adopt the following general policies to ensure that appropriate site management and monitoring actions are conducted at any placement or disposal site, in any of the placement environments:

- *The LTMS agencies will develop and implement site management and monitoring plans for all multi-user placement or disposal sites.¹ These plans will specify the site use parameters necessary to ensure that impacts are minimized and/or benefits are realized. The plans will also specify the monitoring requirements and post-closure activities as appropriate for each site. Site management and monitoring plans will identify specific conditions that would constitute acceptable site performance, as well as adjustments to site use parameters (including termination of continued site use) that would be triggered by specific findings of non-performance.*
- *The LTMS agencies will provide opportunity for public input and comment on proposed site management and monitoring plans for new disposal or placement sites, and on proposed substantive revisions to existing plans. Information from site monitoring efforts will be made available to the public, and opportunity for comment will also be provided as part of the periodic review for existing sites.*

5.1.1.3 Reviewing the Need for Dredging

The impacts and benefits associated with any dredged material management strategy are related to the total amount of material that would be managed under that strategy. This, in turn, depends on the total volume, depth, and physical characteristics of each dredging project. The need for ship channels and other navigation features is determined by the COE in its initial evaluation of the costs and benefits of each new project. This assessment must also be periodically

¹ The development of individual Site Management and Monitoring Plans for single-user placement and disposal sites, such as the Suisun Bay and San Francisco Bar sites, is not necessary because the project environmental and management documents for single-user sites include such management and monitoring plan development requirements.

reviewed and updated to reflect changing conditions over time. Appropriate mechanisms to ensure that no unnecessary dredging will be conducted in the region include revisions of COE Dredged Material Management Plans, and the COE's Composite EIS for Maintenance Dredging.

In addition, each of the major ports within the region engages in a periodic review of past, present, and future port operations as part of the Seaport planning process. During such reviews, the ports may consider the feasibility of structural and other measures that could reduce dredging requirements.

The LTMS agencies will ensure that only necessary dredging occurs by adopting the following policies:

- *The COE, in consultation with the other LTMS agencies, will confirm or revise the Dredged Material Management plans for existing federal maintenance dredging projects in San Francisco Bay, and perform NEPA reviews as needed including supplementing the Composite EIS for Maintenance Dredging. These reviews will include consideration of channel widths, depths, and configurations in terms of potential changes that could reduce the volume of dredging necessary to meet the navigational needs of each project.*
- *BCDC, in consultation with the other LTMS agencies, will continue to work with area ports within the framework of its joint Seaport planning process within the Metropolitan Transportation Commission to identify potential means to reduce the need for dredging while meeting the navigational needs of each port facility. In addition, the LTMS agencies will continue to work to reduce the need for dredging associated with other projects.*

Together, these measures will serve to ensure that environmental risks and expenditure of public funds are minimized. The LTMS agencies recognize that there are special concerns regarding dredging and dredged material disposal options for smaller marine facilities, such as recreational marinas. This issue is addressed in Chapter 6 of this document (see section 6.3.1).

5.1.1.4 Coordinated Dredged Material Management

To improve regulatory certainty for both dredgers and the public, and to ensure that dredged material is managed in a comprehensive manner that addresses relevant concerns and requirements under all of the

applicable authorities, the LTMS agencies will adopt the following general policy:

- *The COE, EPA, SFBRWQCB, and BCDC, together with the State Lands Commission, are formally cooperating in an interagency Dredged Material Management Office (DMMO), to coordinate regulatory requirements and to provide better service to the dredging community and the public. The DMMO was established as a pilot program by the Memorandum of Agreement (MOA), signed by the participating agencies. The DMMO will likely continue to review and coordinate on proposed dredging projects in accordance with the comprehensive LTMS Management Plan developed to implement the preferred alternative management approach selected in the LTMS Policy EIS/ Programmatic EIR.*

The general operating principles under which a pilot DMMO is operating, and upon which the MOA will be based, were signed by the LTMS agencies on September 12, 1995. These general operating principles are presented in Appendix M.

5.1.1.5 Small Dredger Set-Aside

Dredgers vary in their ability to implement UWR or ocean disposal. Small dredgers, defined as dredging projects not exceeding a depth of 12 feet or a volume of 50,000 cy per year on average, in particular, are hampered by the fact that the shallow and often confined areas to be dredged may not allow use of large ocean-going barges. Further, small dredgers may not have the economies of scale or plain economic ability to use the SF-DODS or some UWR sites. Therefore, the LTMS agencies will adopt the following policy:

- *250,000 cy of the in-Bay disposal capacity under the disposal cap will be reserved each year for small dredgers. This small dredger set-aside volume will not be decreased over time. Further, small dredgers will be allowed to exceed the 250,000 cy set-aside in any given year, on a case-by-case basis. Small dredgers will still be required, on a case-by-case basis, to evaluate and implement UWR or ocean disposal if feasible and practicable.*

5.1.2 Mitigation Measures that Apply in Specific Environments

The policies described in this section apply to management of dredged material proposed for disposal or reuse in specific placement environments. General

measures that apply to all disposal environments are discussed above in section 5.1.1, and measures that apply to specific kinds of disposal or reuse projects are presented below in section 5.1.3.

5.1.2.1 Upland Habitat Conversion Associated with Restoration Projects

Some degree of habitat conversion may occur as a result of any type of habitat restoration project. The types of restoration projects most likely to use dredged material are those that restore lands along the Bay margin that were once tidal wetlands but have been diked off, drained, and used for agriculture or other purposes in recent time. In these areas, dredged material can be used to raise the elevation of subsided diked historic baylands so that when dikes are breached, tidal wetland habitat is restored. Such restoration projects offer a unique opportunity, both to reduce the impacts associated with the historic practice of disposing of dredged material in the Bay, and to provide significant regional environmental benefits. The regional environmental benefits of wetland restoration are discussed further in the alternatives analysis presented in Chapter 6 of this EIS/EIR.

LTMS technical studies have identified and preliminarily evaluated numerous sites around the Bay margin where wetland restoration using dredged material would be feasible (LTMS 1995d). The main physical features commonly present at these sites are perimeter levees, internal levees, drainage ditches, and saline basins. The existing habitat value of these sites depends, in part, on whether the current users drain and pump water, the type of crops grown, and the types of agricultural equipment used. Even though these sites typically have been extensively altered by decades of human activity, they often still provide some important habitat values. For example, many diked historic bayland areas support seasonal wetlands that serve as habitat for migrating shorebirds and other waterfowl.

Restoration of tidal wetlands at these locations would permanently change the existing habitat type (e.g., from seasonal farmed wetland or upland grassland, to tidal wetland), and result in the establishment of different communities of plants, migratory and resident bird populations, fish, and wildlife using these sites. Public concern has been expressed over the regional implications of shifting the ecological values and functions of a site in this manner; in particular, there are differences of opinion about which habitat type(s) may be more important at a given location. To adequately address this issue, it is necessary to define

long-term, regional goals for different habitat types, including the desired acreage and distribution within and among different areas of the region. Developing such goals is called for in the Comprehensive Conservation and Management Plan (CCMP) of the San Francisco Estuary Project. However, this task is extremely complex.

A coordinated effort to develop regional habitat goals is in progress through the coordination of numerous planning and regulatory efforts focused on the recovery of regional wetland and other natural resources. Planning efforts such as the Endangered Species Recovery Plan, BCD's North Bay Management Program, the Regional Wetlands Management Program of the SFBWQCB, including the Regional Wetlands Monitoring Program, the interagency Regional Wetlands Goals effort coordinated through the San Francisco Estuary Institute, and the Save San Francisco Bay Association's Partnership for the San Pablo Baylands are expected to bring the shared vision of habitat restoration into focus to implement the CCMP.

The LTMS agencies support the continuation of these planning efforts, and will rely on their results when considering the use of dredged material in wetland restoration projects by adopting the following policies:

- *The LTMS agencies will encourage, and authorize as legally appropriate, habitat enhancement and restoration efforts using dredged material that are designed to be consistent, to the maximum extent practicable, with specific habitat goals established by regional planning efforts for managing the region's natural resources. Implementation of projects in this manner will ensure that such reuse efforts will reflect the regional goals for restoration, thereby maximizing the environmental benefits of such projects for the region.*
- *The LTMS agencies will also encourage, and authorize as legally appropriate, independent habitat restoration projects using dredged material (in areas not covered by established habitat goals) when they would clearly result in an overall net gain in habitat quality, and would minimize loss of existing habitat functions. Whenever feasible, such projects will provide, as part of the project design, for a no net loss in the habitat functions existing on the project site or, where necessary, provide compensatory mitigation for lost habitat functions in accordance with state and federal mitigation requirements.*

Together, these measures will assist in the implementation of established regional habitat restoration goals, ensure long-term enhancement of habitat, support beneficial uses associated with that habitat within the region, and improve regulatory certainty for sponsors of restoration projects.

5.1.2.2 Habitat Protection

As generally described in Section 3.1, dredging and dredged material disposal in the San Francisco Bay Estuary has the potential to affect a variety of species of concern. During the preparation of this EIS/EIR, federal and state resource agencies were informally consulted about the degree of potential impacts to different aquatic resources in different locations. As a result of this consultation and public comments on the DEIS/EIR, the LTMS and resource agencies agreed to broaden the consultation to include dredging related impacts and parts of the Delta in order to streamline the permitting process. A complete description of the consultation requirements and concerns raised by the resource agencies are presented in the revised Appendix J. Some of the concerns raised in Appendix J are addressed in this EIS/EIR through the programmatic consideration of environmental impacts/risks associated with different dredged material placement distributions in the alternatives analysis (Chapter 6). Specifically, all of the action alternatives considered in Chapter 6 include a reduction of in-Bay disposal volumes. A reduction of in-Bay disposal volume and frequency would effectively mitigate some potential impacts. However, there are a number of concerns that relate to specific sensitive species, dredging, and in-Bay disposal that are not fully addressed by the more general assessment of material placement distributions. This section describes the species of concern and policy-level mitigation measures that will avoid these particular types of impacts.

The following discussions summarize the vulnerability of special-status and/or high-concern species to dredging and disposal activities within various parts of the LTMS study area. Section 3.1.1.3 provides an overview of the consequences of dredging in aquatic environments, and sections 3.2.4 through 3.2.6 describe issues related to sediment disposal and potential contaminant release in aquatic, upland, and nearshore environments. For background information on the species of concern, refer to section 4.3.1.5.

Delta Smelt

The Delta smelt is a federally listed threatened species, for which designated critical habitat includes the waters of the Delta and Suisun Bay west to the Carquinez Bridge. All dredging and disposal activities in these waters require consultation with the USFWS. The fish are short-lived planktivores that are vulnerable to dredging or disposal activities that may entrain fish, degrade water quality, and otherwise disrupt foraging. Shoreline and shallow-bottom “nursery” areas may also be adversely affected by dredging or disposal activities that impinge on these areas or affect them indirectly through increased turbidity. To avoid adversely impacting this species, dredging and disposal activities within tidal open water habitats in this critical habitat area should be restricted throughout the year, subject to review on a case-by-case basis through consultation with the USFWS and CDFG.

Chinook Salmon

Winter-run chinook salmon are federally listed as an endangered species. Fall/Late-fall and Spring-run chinook salmon are proposed for federal listing. Migration of chinook salmon could be affected by dredging in the vicinity of Pinole Shoal, the Suisun Bay channel, and along migratory corridors in the Delta. Dredging may disrupt foraging, migration, or cause injury to migrating fishes. Dredging in these areas during fall through spring migration periods, which depend on the location under consideration, should generally be restricted and requires consultation with NMFS.

Migration is not expected to be adversely affected by disposal operations at the Alcatraz and San Pablo disposal sites (particularly if overall allowable disposal volumes are reduced), because these fish would be able to easily avoid any area of degraded habitat near the sites. However, the Carquinez disposal site is of more concern because it lies in a narrow channel that these migratory fish must pass through, and they would not be able to easily avoid degraded habitat near this disposal site. Disposal may be permitted outside of the restricted period without contacting the resource agencies, thereby precluding the need to conduct a formal consultation for this species.

Steelhead Trout

All races of steelhead trout that migrate through the Bay are now federally listed as threatened. Steelhead migrate through the Bay during fall and early winter and congregate at the mouth of the Napa River waiting for high flows before they continue upstream. Here and elsewhere, dredging may disrupt foraging or migration and cause injury to migrating fishes. Dredging activities during the fall through spring migration season should be restricted along known migration corridors, especially the Napa and Petaluma rivers and Sonoma Creek, and generally conducted only after consultation with NMFS.

As discussed in Chapter 4, material deposited at the Carquinez Strait site has been shown to move back up into the mouth of the Napa River. During periods of high frequency disposal at this site, plumes may not fully dissipate between dumps and tidal action can potentially transport disposed material back into the area where steelhead congregate. Avoiding, to the extent practicable, high-frequency disposal in the narrow Carquinez Strait area during the peak migration period for steelhead trout is a reasonable and prudent conservation measure. Disposal at this site and at the San Pablo Bay and Alcatraz sites should be minimized during the January through May migration period. Disposal should be restricted along Delta migration corridors during the October through May

Sacramento Splittail

The Sacramento splittail is a federally proposed threatened species that inhabits tidal sloughs and embayments from the Delta to Suisun Bay and westward through the Carquinez Strait to San Pablo Bay (Petaluma River). These fish are bottom feeders. Submerged vegetation provides important spawning and juvenile rearing habitat. This species is vulnerable to entrainment or burial, as well as indirect effects of dredging and disposal on water quality. To avoid adversely impacting this species, dredging and disposal activities in tidal open water areas in the Suisun Bay and Delta west to the Carquinez Bridge, and in proximity to tidal creek and river mouths in San Pablo Bay, should be restricted throughout the year, subject to review on a case-by-case basis through consultation with the USFWS, NMFS, and CDFG.

Longfin Smelt

The longfin smelt is a former candidate for federal listing, and is also commercially important. This

species spawns in Suisun Bay and the Delta during late winter and early spring. The larvae float downstream and are abundant in both the deep channels and shallower areas of Suisun Bay. The larvae and juveniles drift downstream during high flows and as a result are vulnerable to entrainment during dredging operations in spring and early summer in San Pablo Bay. Dredging should be minimized during this period. Dredging activities may entrain fish or degrade spawning grounds in the Suisun Bay region and western Delta and should be minimized, from December through August in the Suisun Bay region, and from December through February in the western Delta.

Disposal of sandy material (the only type of material currently approved for disposal at the Suisun Bay site) causes short-term degradation of water quality that is usually limited to the disposal site and immediately adjacent area. Disposal of this material is therefore not expected to significantly affect the longfin smelt population. However, avoiding the period when larvae are most abundant is a reasonable and prudent conservation measure.

Pacific Herring

Pacific herring is not specifically protected but is an abundant and commercially important species in Central San Francisco Bay. Artificial structures along developed shorelines provide the primary spawning habitat for Pacific herring. Spawning occurs in the spring, and the eggs undergo development for about two weeks while attached to hard surfaces. In these areas, the eggs are vulnerable to smothering caused by turbidity that results from dredging. Temporary restrictions on dredging and measures to limit turbidity where spawning has occurred are appropriate and should be refined for specific projects in consultation with CDFG.

Recreational Fishing

Recreational fishing may be affected by disposal activities in the vicinity of the Alcatraz disposal site. To minimize potential conflicts, disposal should be minimized during the period of highest recreational activity, nominally May 1 through October 31.

Dungeness Crab

As discussed in section 4.3.1.5, Central San Francisco Bay and San Pablo Bay constitute a vital nursery area for juvenile dungeness crab, a commercially important species. The juveniles live on the bottom and, as a

result, are vulnerable to entrainment during dredging activities. In shallow berthing areas and channels subject to dredging, dredging should be restricted during the May-June period when juveniles migrating into the estuary are most vulnerable.

California Least Tern

This state and federally listed endangered species depends on shallow water foraging habitats that support an abundance of small fishes that serve as this species' main food source. Least terns are present during spring and summer primarily in the Central Bay and South Bay and, to a lesser extent, eastward into San Pablo and Suisun Bays. Consultation with the USFWS and CDFG is required for activities that may affect this species, including direct and indirect impacts on eelgrass beds and, in South Bay, salt ponds and sloughs, that serve as important foraging habitat for this species. Impacts of dredging or disposal operations that eliminate or degrade these habitats are of concern regardless of time of year. Impacts of dredging and disposal activities on turbidity and, consequently, foraging success, are of high concern during the critical spring-summer nesting season.

California Clapper Rail

This state and federally listed endangered species inhabits tidal marsh habitats in the Central and South Bay, San Pablo Bay, and the western Suisun Marsh. It nests tidal marsh vegetation feeds on invertebrates and small fishes along adjacent tidal channels and mudflats. They also utilize adjacent non-tidal marsh and upland habitats when tidal marshes are inundated by extreme high tides. Within these habitats, rails are sensitive to noise and human activity. Consultation with USFWS and CDFG should be undertaken where these tidal marsh habitats and contiguous non-tidal habitats are exposed to the effects of dredging or disposal operations. Similar considerations would apply to the state-listed threatened black rail.

Western Snowy Plover

This federally listed threatened species nests on beaches in a few locations in the Bay/Delta and is potentially vulnerable to dredging or disposal operations that directly or indirectly affect these beaches and adjacent tidal flats where the species forages. Informal consultation with USFWS should be initiated to determine whether particular sites may support this species, and consultation continued for projects that may affect their nesting and foraging habitats.

California Brown Pelican

This widely ranging state and federally listed endangered species forages in open water habitats and roosts on breakwaters and other structures along the shoreline. Disturbance at roosting sites may affect foraging success or the birds' energetics by forcing them to use other roosts that are farther from foraging areas. Dredging or disposal within 300 feet of major roosting areas should be avoided when the birds are present.

Salt Marsh Harvest Mouse

This state and federally listed endangered species inhabits the upper zone of tidal marshes, as well as diked, non-tidal salt marshes around the Bay margins. Like the clapper rail, this species requires a refuge above extreme high tides or flooding in diked marshes, and will utilize adjacent uplands to that end. Consultation with USFWS and CDFG should be initiated where tidal and non-tidal salt marshes and adjacent uplands would be affected by dredging or disposal operations.

Table 5.1-1 summarizes the restrictions developed with the resource agencies for dredging projects. It lists the locations and time periods that represent critical habitat for special status and/or important commercial and recreational species. During periods when these organisms are present at or near certain dredging projects, they may be subject to adverse impacts unless the indicated restrictions are applied. Any dredging projects proposing deviations from these tables will not be approved by the LTMS agencies unless, through the Section 7 consultation process, project sponsors obtain project-specific concurrence from the appropriate resource agencies. This table is a summary of the dredging table included in Appendix J. The table in Appendix J includes more detailed information on the impacts to specific species and should be consulted for complete details. In order to ensure that dredging projects do not pose unacceptable risks to species of special concern, the LTMS agencies adopt the following policy level mitigation measure:

- *Dredging activities will be restricted as indicated on Table 5.1-1. Any dredging projects proposing deviations from these tables will not be approved by the LTMS agencies unless, through the Section 7 consultation process, project sponsors obtain project-specific concurrence from the appropriate resource agencies.*

Table 5.1-1. Summary by Area: Timing Restrictions on Dredging Activity in the San Francisco Bay/Delta Estuary
(page 1 of 2)

Dredging Site	Period When Dredging Generally Allowed (a)	Period of Restricted Dredging (b)	Restriction(s), or Applicable Consultation and Permit Requirements (c)	Species Causing Restriction(s) (Rank) (d)
Southern Delta critical habitat (see Figure J-1 [Appendix J])	July 1 to January 31	February 1 to June 30	Consultation & Permit Requirements A, B, and E apply.	Delta smelt (1)
Central Delta critical habitat (see Figure J-1 [Appendix J])	July 1 to November 30	December 1 to June 30	Do not permit dredging in these locations during period of restriction. Otherwise, applicants REQUIRED to conduct individual formal Consultation with USFWS and CDFG.	Delta smelt (1)
Northern Delta critical habitat (see Figure J-1 [Appendix J])	August 1 to September 14	September 15 to July 31	(same as above)	Delta smelt (1)
Western Delta (= Northern Delta) critical habitat (see Figure J-1 [Appendix J])	March 1 to November 30	December 1 to February 28	(same as above)	Longfin smelt (3)
Delta	December 1 to July 31	August 1 to November 30	(same as above)	Sacramento splittail (2)
Fish migratory corridors east of Sherman Island	June 1 to September 30	October 1 to May 31	(same as above)	Chinook salmon adults and juveniles, and steelhead trout (1)
Carquinez Strait/Suisun Bay including marshes, Martinez Bridge east to Collinsville	N/A	January 1 to December 31 (all year)	Formal consultation REQUIRED for aquatic OR upland disposal at any location where species of concern may be present	Delta smelt, California least tern, California clapper rail, salt marsh harvest mouse (1); Sacramento splittail (2); longfin smelt (3)
Carquinez Strait/Suisun Bay including sloughs	June 1 to December 31	January 1 to May 31	Consultation & Permit Requirements A, B, C, D and E apply.	Chinook salmon adults & juveniles, steelhead trout (1)
Napa River, Petaluma River, Sonoma Creek	August 1 to October 14	October 15 to July 31	Do not permit dredging in these locations during period of restriction. Otherwise, individual ESA Consultation with the USFWS, NMFS, and CDFG is required.	Steelhead trout (1); Sacramento splittail (2)

Table 5.1-1. Summary by Area: Timing Restrictions on Dredging Activity in the San Francisco Bay/Delta Estuary
(page 2 of 2)

<i>Dredging Site</i>	<i>Period When Dredging Generally Allowed (a)</i>	<i>Period of Restricted Dredging (b)</i>	<i>Restriction(s), or Applicable Consultation and Permit Requirements (c)</i>	<i>Species Causing Restriction(s) (Rank) (d)</i>
San Pablo Bay	August 1 to December 31	January 1 to July 31	Consultation & Permit Requirements A, B, C, D and E apply.	Chinook salmon adults & juveniles, steelhead trout (1); longfin smelt (3)
San Pablo Bay mudflats, and in/adjacent to tidal salt marshes)	N/A	January 1 to December 31 (all year)	Consultation & Permit Requirements D and F apply (re clapper rail — February 1 to August 31). Formal consultation REQUIRED for any project that may result in a direct loss of mudflat (re plover) or salt marsh habitat (re SMHM).	California clapper rail, snowy plover, salt marsh harvest mouse (1)
San Pablo Bay (eelgrass beds)	N/A	January 1 to December 31 (all year)	Formal consultation REQUIRED for any project that may result in a direct loss of eelgrass.	California least tern (1)
San Pablo Bay (shallow berthing areas & channels)	July 1 to April 30	May 1 to June 30	Consultation & Permit Requirements A and B apply.	Dungeness crab (4)
Central SF Bay	June 1 to November 30	December 1 to May 31	Herring: Consultation & Permit Requirement H applies December 1 to February 28. Salmon & Steelhead, Consultation & Permit Requirements A, B, C, D and E apply.	Chinook salmon and steelhead trout (1); Pacific herring (3)
Central SF Bay (shallow berthing areas & channels)	July 1 to April 30	May 1 to June 30	Consultation & Permit Requirements A and B apply.	Dungeness crab (4)
Central SF Bay (within 3 miles of NAS Alameda)	September 1 to March 31	April 1 to August 31	Do not permit dredging in these locations during period of restriction. Otherwise, applicant is REQUIRED to conduct individual formal Consultation with USFWS and CDFG.	California least tern (1)
Central SF Bay (eelgrass beds)	N/A	January 1 to December 31 (all year)	Formal consultation REQUIRED for any project that may result in a direct loss of eelgrass.	California least tern (1)
South SF Bay (including sloughs and salt ponds)	September 1 to May 31	June 1 to August 31	(same as above)	California least tern (1)

Notes:
a. Time period during which dredging may generally be permitted, without additional restrictions for species of special concern.
b. Time period during which dredging generally will NOT be permitted, or when additional restrictions apply to protect species of special concern.
c. See Legend for consultation and permit requirements.
d. See Legend for species rankings (1 through 4).

Legend for Tables 5.1-1 and 5.1-2

<i>Species Ranking</i>	<i>Consultation and Permit Requirements (Dredging and Disposal Restrictions)</i>	
1. Federal or state-listed endangered or threatened species. Consultation is required with USFWS, and possibly CDFG, if dredging or disposal is proposed during the period of restricted activity in critical locations.	A. Clamshell dredging shall be required whenever practicable in areas within 250 feet of a shoreline OR in depths less than 20 feet.	E. Best Management Practices to reduce turbidity (including silt curtains or other physical or operational measures) shall be required for these projects.
2. Species proposed for listing under the federal ESA, candidate for listing under the California ESA, or CDFG Species of Special Concern for which impacts from dredging or disposal could pose significant problems to existing or future population levels.	B. If hydraulic dredging in depths less than 20 feet, dredge head must be maintained at or below substrate surface. Head may not be raised more than 3 feet off bottom for flushing; shut off pump when raising head more than 3 feet off bottom (e.g., at end of dredging).	F. Restriction applies within the identified critical period, and within 250 feet of emergent vegetation. USFWS and CDFG must be contacted in these circumstances.
3. Status reviews are being conducted. Species with established recreational or commercial value or ecological function for which impacts from dredging or disposal may pose significant problems to existing or future population levels.	C. For new-work projects where eelgrass will be unavoidably affected, a compensatory mitigation plan must be submitted and approved by USFWS, NMFS, CDFG, USACE, and EPA prior to permitting.	G. If dredging must be conducted during this period, CDFG must be contacted and the permittee must provide an observer to identify herring spawning activity. Dredging must stop immediately if herring are within 200 m of the work site, and may not until hatch-out is complete (approximately 10-14 days).
4. Species of species groups with established recreational or commercial value or ecological function for which impacts from dredging or disposal should pose only minor problems to existing or future population levels.	D. If project will cause unavoidable direct or indirect effects to submerged or emergent aquatic vegetation, compensatory mitigation at 3:1 ratio is required for lost functions and values. Other proposed ratios require consultation with USFWS and CDFG.	H. Other historically used nesting areas include Bair Island, Oakland Airport, Alvarado salt ponds, PG&E Pittsburg, and Port Chicago. Contact USFWS to determine whether species may be present; if present, dredging restriction in Table applies.

Table 5.1-2 summarizes the restrictions developed with the resource agencies for dredged material disposal. It lists the locations and time periods that represent critical habitat for special status and/or important commercial and recreational species. During periods when these organisms are present at or near certain dredged material disposal sites, they may be subject to adverse impacts unless the indicated restrictions are applied. Any dredged material disposal projects proposing deviations from these tables will not be approved by the LTMS agencies unless, through the Section 7 consultation process, project sponsors obtain project-specific concurrence from the appropriate resource agencies. In regard to minimizing disposal at the designated in-Bay disposal sites, the LTMS agencies will closely review proposed projects to ensure that overall disposal is minimized during the indicated time frames. Disposal project proponents are advised that the agencies will require that the need for disposal at these sites during the specified time frames must be clearly established. This table is a summary of the dredged material disposal table included in Appendix J. The table in appendix J includes more detailed information on the impacts to specific species and should be consulted for complete details. In order to ensure that dredged material disposal projects do not pose unacceptable risks to species of special concern, the LTMS agencies adopt the following policy level mitigation measure:

- *Dredged material disposal activities will be minimized or restricted as indicated on Table 5.1-2. The LTMS agencies will closely review disposal projects proposed for the designated in-Bay disposal sites to ensure that disposal during the indicated time frames is minimized or avoided as indicated. Disposal project proponents are advised that the agencies will require that the need for disposal at these sites during the specified time frames must be clearly established. Any disposal projects or new disposal sites proposing deviations from these tables will not be approved by the LTMS agencies unless, through the Section 7 consultation process, project sponsors obtain project-specific concurrence from the appropriate resource agencies.*

The measures listed above, in combination with reduced in-Bay disposal under any of the action alternatives described later in this chapter, would constitute appropriate, programmatic mitigation for the potential impacts of dredging and dredged material disposal on species of special concern.

5.1.2.3 Ocean Site Monitoring

Extensive site management and monitoring requirements have been established for the San Francisco Deep Ocean Disposal Site (SF-DODS). These requirements are set out in the EPA final rule formally designating the site, and thus are already codified in law. Additional rulemaking would be required to substantively change these existing site management and monitoring requirements. EPA will prepare an additional rule following completion of this EIS/EIR to designate a permanent capacity for the SF-DODS (see Chapter 7). However, the basic site management and monitoring requirements already established for this site are not expected to be significantly changed. The existing site management and monitoring plan for the SF-DODS is fully in accord with the general LTMS Site Management and Monitoring policies listed above under section 5.1.1.3.

5.1.3 Mitigation Measures Applicable to Specific Types of Projects or Facilities

Increased upland or wetland reuse and disposal of material that is not suitable for unconfined aquatic disposal (NUAD-class material) may require a number of new projects and facilities within the region over the 50-year planning period. The most likely types of new facilities that may be constructed in the future include rehandling facilities, dedicated confined disposal facilities, wetland restoration projects, and confined aquatic disposal sites. In addition, the LTMS agencies expect that a substantial amount of dredged material will be used in place of other sources of fill material to repair or stabilize existing levees.

Construction and operation of any of these projects or facilities has the potential to affect on-site and nearby environmental quality including, but not limited to, the following: plant communities, migratory and resident bird populations, fish and wildlife, water quality, air quality, traffic, and noise. A complete environmental review of proposed projects and facilities is necessary to evaluate these potential impacts at specific sites. However, numerous existing policies and regulations currently being implemented by the LTMS agencies serve to programmatically avoid and minimize environmental impacts associated with these types of projects and facilities (e.g., NEPA and CEQA requirements; the Clean Water Act 404(b)(1) Guidelines, etc.). The LTMS agencies will fully and appropriately apply the existing regulations and policies to ensure that any adverse impacts associated with the construction and operation of specific new projects or

Table 5.1-2. Summary by Area: Timing Restrictions on Disposal Activity in the San Francisco Bay/Delta Estuary
(page 1 of 2)

<i>Location, or Disposal Site</i>	<i>Period When Disposal Generally Allowed (a)</i>	<i>Period of Restricted Disposal (b)</i>	<i>Restriction(s), or Applicable Consultation and Permit Requirements (c)</i>	<i>Species Causing Restriction(s) (Rank) (d)</i>
SF-8 (Suisun Bay Disposal Site)	January 1 to December 31 (all year)	N/A	Minimize disposal to the extent possible when species is present (January 1 to May 31)	Chinook salmon (adults, juveniles) (1)
SF-9 (Carquinez Strait Disposal Site)	January 1 to December 31 (all year)	N/A	Minimize disposal to the extent possible when species of concern may be present (January 1 to May 31)	Chinook salmon (adults, juveniles), steelhead trout (1)
SF-10 (San Pablo Bay Disposal Site)	January 1 to December 31 (all year)	N/A	Minimize disposal to the extent possible when species of concern may be present (January 1 to October 31)	Chinook salmon (adults, juveniles), steelhead trout: January 1 to May 31 (1); recreational marine fishes: May 1 to October 31 (3)
SF-11 (Alcatraz Disposal Site)	January 1 to December 31 (all year)	N/A	Minimize disposal to the extent possible when species of concern may be present (January 1 to October 31)	Steelhead trout: January 1 to May 31 (1); recreational marine fishes: May 1 to October 31 (3)
SF-12 (San Francisco Bar Channel Disposal Site)	January 1 to December 31 (all year)	N/A	None	N/A
SF-DODS	January 1 to December 31 (all year)	N/A	None	N/A
Sacramento/ San Joaquin Delta critical habitat	N/A	January 1 to December 31 (all year)	Formal consultation with USFWS and CDFG for any disposal outboard of levees in this area, at any time. (No restrictions on upland disposal relative to Delta smelt.)	Delta smelt (1)
Fish migratory corridors east of Sherman Island	June 1 to September 30	October 1 to May 31	Restrict disposal to the extent feasible in these areas during period of restriction. See Consultation and Permit Requirement E.	Chinook salmon (adults, juveniles), steelhead trout (1)

Table 5.1-2. Summary by Area: Timing Restrictions on Disposal Activity in the San Francisco Bay/Delta Estuary

(page 2 of 2)

Location, or Disposal Site	Period When Disposal Generally Allowed (a)	Period of Restricted Disposal (b)	Restriction(s), or Applicable Consultation and Permit Requirements (c)	Species Causing Restriction(s) (Rank) (d)
Carquinez Strait/Suisun Bay (other than SF-8, SF-9) including marshes, Martinez Bridge east to Collinsville	N/A	January 1 to December 31 (all year)	Formal consultation with USFWS and CDFG is REQUIRED for aquatic OR upland disposal at any location where species of concern may be present (other than SF-8 or SF-9)	Delta smelt, California least tern, California clapper rail, salt marsh harvest mouse (1); Sacramento splittail (2); longfin smelt (3)
San Pablo Bay (other than SF-10) including marshes and salt ponds	N/A	January 1 to December 31 (all year)	Formal consultation with USFWS and CDFG is REQUIRED for aquatic OR upland disposal at any location where species of concern may be present (other than SF-10)	California least tern, California clapper rail, snowy plover, salt marsh harvest mouse, California brown pelican (1); Sacramento splittail (2)
Central SF Bay (other than SF-11) in/adjacent to tidal marshes, and within 3 miles of NAS Alameda	N/A	January 1 to December 31 (all year)	Formal consultation with USFWS and CDFG is REQUIRED for aquatic OR upland disposal at any location where species of concern may be present (other than SF-11)	California least tern, California clapper rail, salt marsh harvest mouse, California brown pelican (1)
South SF Bay (including sloughs and salt ponds)	N/A	January 1 to December 31 (all year)	Formal consultation with USFWS and CDFG is REQUIRED for aquatic OR upland disposal at any location where species of concern may be present	California least tern, snowy plover (1)
<p>Notes:</p> <p>a. Time period during which disposal may generally be permitted, without additional restrictions for species of special concern.</p> <p>b. Time period during which disposal generally will NOT be permitted, or when additional restrictions apply to protect species of special concern.</p> <p>c. See Legend for consultation and permit requirements.</p> <p>d. See Legend for species ranking (1 through 4).</p>				

facilities will be minimized and, as necessary, mitigated.

The following sections briefly list issues that should be addressed in site-specific environmental analyses for specific types of dredged material disposal or reuse facilities.

5.1.3.1 Rehandling Facilities and Dedicated Confined Disposal Facilities

Rehandling facilities provide a key link between dredging projects and the ultimate use of material in upland projects. Material is typically offloaded from barges, dewatered, dried, then shipped off-site to a final use. These facilities can also sort and potentially treat contaminated material. Material that requires confinement may be transported to a dedicated confined disposal facility (CDF) constructed specifically for the permanent storage of such dredged material, or to other appropriate, existing sites (such as landfills) that provide adequate containment. A number of existing rehandling facilities and CDFs have been used to process or manage relatively small volumes of material from specific dredging projects within the planning area. However, the existing capacity of these facilities is not sufficient to handle the volume of material that would go to upland or wetland reuse or disposal under the action alternatives described in Chapter 6. The existing capacity is also insufficient for the overall volume of material that is projected to be not suitable for unconfined aquatic disposal (10 to 20 percent of all material dredged is expected to be NUAD-class material). Thus any of the alternatives (other than No-Action) would require the construction of new facilities or expansion of existing facilities.

The potential impacts of construction and operation of specific new rehandling facilities or CDFs must be identified and evaluated in project-specific environmental assessments. As overall guidance, the construction/expansion and operation of rehandling facilities and CDFs must carefully consider, but not be limited to the evaluation of, the following issues: (1) site selection; (2) facility construction practices; (3) facility operations; (4) facility administration and maintenance; and (5) regulatory, mitigation, and monitoring requirements. Specific engineering

guidance can be obtained from the LTMS Reuse/Upland Site Ranking, Analysis, and Documentation report (LTMS 1995d) and other LTMS upland/reuse technical studies reports. To ensure that these environmental assessments appropriately address all the issues of concern, the LTMS agencies will adopt the following general policy:

- *The LTMS agencies will address, as appropriate, the issues identified in Table 5.1-3 in site-specific assessments of the development, expansion, or operation of dredged material rehandling facilities or dedicated confined disposal sites.*

5.1.3.2 Wetland Restoration

As described in more detail in section 5.1.2.1, one of the most important beneficial uses of dredged material in the region is in the restoration of historic habitats, including tidal wetland areas around the margins of the Bay. There are several potential environmental impacts that should be addressed in the design and site-specific environmental assessments of wetland restoration projects. As overall guidance, the reuse of dredged material for wetland restoration must carefully consider, but not be limited to the evaluation of, the following issues: (1) site selection; (2) site construction; (3) site development (i.e., dredged material placement); (4) facility administration and maintenance; and (5) regulatory, mitigation, and monitoring requirements. Also, a Section 7 consultation pursuant to the ESA needs to be conducted for projects that may adversely affect or jeopardize any federally listed species. The state Department of Fish and Game may also need to be consulted for such projects. Specific engineering guidance can be obtained from the LTMS Reuse/Upland Site Ranking, Analysis, and Documentation report (LTMS 1995d) and other LTMS upland/reuse technical studies reports. The following policy ensures that the necessary issues will be evaluated:

- *The LTMS agencies will address, as appropriate, all of the issues identified in Table 5.1-4 in site-specific assessments of proposed wetland restoration projects using dredged material.*

Table 5.1-3. Overall Guidance for Rehandling Facilities and Dedicated Confined Disposal Facilities

<i>Type of Issue</i>	<i>Issues to be Addressed During Project-Specific Review</i>
<i>Maximization of Wetland Restoration and Enhancement</i> Wetland restoration and enhancement using dredged material will be emphasized to enhance and restore the natural resources of the Estuary.	
Site Selection	Water access to the site for dredged material off-loading — deep-water access (-15 to -17 feet MLLW) is optimal
	Evaluate existing habitat functions and document other existing baseline conditions
	Evaluation of proposed site conditions in terms of their suitability for the restoration effort, including:
	<ul style="list-style-type: none"> • Average elevation of areas to be filled • Tidal range and flood elevation • Alignment and elevation of existing levees • Area available for dredged material use (fill depth) • Total restoration area possible • Typical foundation conditions • Location and size of existing culverts and pumps • Characteristics of the dredged material to be used (e.g., grain size, material density, dredging method, etc.) • Consideration of regional and/or interagency habitat plans (e.g., the Wetlands Ecosystem Goals Project)
	Assessment of utility crossings, easements, and adjacent land uses
Site Construction	Assessment of adequately engineered and constructed perimeter and interior levees
	Analyses of the suitability of proposed spillways and water controls
	Assessment of the feasibility of proposed dredged material off-loading facilities and the adequacy and location of proposed pipelines for transporting dredged material
	Assessment and development of appropriate engineering guidelines for seismic events.
<i>Projects Designed for Ecological Restoration</i> — Projects using dredged material for wetland restoration and enhancement will be designed in a manner that provides for ecological restoration of the site and provides for a diversity of habitat values, particularly for threatened and endangered species.	
Site Development	Proximity to a channel with sufficient water depth to allow access by off-loading scows, with little or no hindrance to local navigation
	The ability to moor full scows waiting to be unloaded and empty scows waiting to be towed back to the dredging site
	Evaluation of a suitable off-loading site in terms of proximity to the restoration site and its ability to handle the proposed types of off-loading equipment
	Evaluation of the proposed means for dredged material placement at the restoration site
	Evaluation of the ability to prevent overfilling of the restoration site
Facility Administration & Maintenance	Evaluation of the proposed management of all construction operations and post-construction maintenance
	Evaluation of the proposed inspection and supervision of contractors working on site
Regulatory, Mitigation, & Monitoring Requirement	Determination of the need for federal permits or reviews
	Determination of the need for state permits or reviews
	Determination of the need for local approvals
	Evaluation of proposed mitigation and monitoring plans to ensure compliance with all applicable federal and state regulations and policies
	Consultation per Section 7 of the Endangered Species Act
Evaluate proposed projects in terms of their likelihood of success, as shown in monitoring of smaller scale demonstration studies conducted in the Bay Area.	

Table 5.1-4. Overall Guidance for Wetland Restoration

Type of Issue	Issues to be Addressed During Project-Specific Review
<i>Maximization of Wetland Restoration and Enhancement</i> — Wetland restoration and enhancement using dredged material will be emphasized to enhance and restore the natural resources of the Estuary.	
Site Selection	Water access to the site for dredged material off-loading — deep-water access (-15 to -17 feet MLLW) is optimal
	Evaluate existing habitat functions and document other existing baseline conditions
	Evaluation of proposed site conditions in terms of their suitability for the restoration effort, including: <ul style="list-style-type: none"> • Average elevation of areas to be filled • Tidal range and flood elevation • Alignment and elevation of existing levees • Area available for dredged material use (fill depth) • Total restoration area possible • Typical foundation conditions • Location and size of existing culverts and pumps • Characteristics of the dredged material to be used (e.g., grain size, material density, dredging method, etc.) • Consideration of regional and/or interagency habitat plans (e.g., the Wetlands Ecosystem Goals Project)
	Assessment of utility crossings, easements, and adjacent land uses
	Assessment of adequately engineered and constructed perimeter and interior levees
	Analyses of the suitability of proposed spillways and water controls
Site Construction	Assessment of the feasibility of proposed dredged material off-loading facilities and the adequacy and location of proposed pipelines for transporting dredged material
	Assessment and development of appropriate engineering guidelines for seismic events.
<i>Projects Designed for Ecological Restoration</i> — Projects using dredged material for wetland restoration and enhancement will be designed in a manner that provides for ecological restoration of the site and provides for a diversity of habitat values, particularly for threatened and endangered species. Wetland characteristics specific to special status species must be addressed for the purposes of establishing performance criteria for created systems.	
Site Development	Proximity to a channel with sufficient water depth to allow access by off-loading scows, with little or no hindrance to local navigation
	The ability to moor full scows waiting to be unloaded and empty scows waiting to be towed back to the dredging site
	Evaluation of a suitable off-loading site in terms of proximity to the restoration site and its ability to handle the proposed types of off-loading equipment
	Evaluation of the proposed means for dredged material placement at the restoration site
	Evaluation of the ability to prevent overfilling of the restoration site
Facility Administration & Maintenance	Evaluation of the proposed management of all construction operations and post-construction maintenance
	Evaluation of the proposed inspection and supervision of contractors working on site
Regulatory, Mitigation, & Monitoring Requirement	Determination of the need for federal permits or reviews
	Determination of the need for state permits or reviews
	Determination of the need for local approvals
	Evaluation of proposed mitigation and monitoring plans to ensure compliance with all applicable federal and state regulations and policies
	Consultation per Section 7 of the Endangered Species Act
	Evaluate proposed projects in terms of their likelihood of success, as shown in monitoring of smaller scale demonstration studies conducted in the Bay Area.

5.1.3.3 Confined Aquatic Disposal (CAD)

The LTMS agencies may consider a number of options for the disposal of NUAD material in the future, including confined aquatic disposal (CAD). CAD can include nearshore fill or wetland creation projects where NUAD-class dredged material is used as “non-cover” material, as well as the more traditional concept of capping in open water environments. Issues associated with CAD in nearshore or wetland creation situations are addressed by policy-level mitigation measures related to material suitability and habitat conversion.

As overall guidance, the LTMS agencies will evaluate any CAD site proposed in the Estuary following the general guidance provided in Appendix G (Palermo et al. 1995), and in the COE/EPA national capping guidance document *Guidance for Subaqueous Dredged Material Capping* (Palermo et al. 1995) and its future revisions.

CAD projects must include careful consideration of siting, design, construction, and monitoring. Contaminated sediments must be placed at the CAD site with acceptable levels of dispersion, and the cap must

be successfully placed and maintained. The evaluation process for a CAD project includes selection of an appropriate site, characterization of both contaminated and capping sediments, selection of compatible equipment and placement techniques, prediction of material dispersion during placement, determination of the required cap thickness, evaluation of cap stability against erosion or bioturbation, and development of a monitoring program. In the San Francisco Bay Area, CAD projects may be considered in association with habitat enhancement or restoration, or other beneficial reuses.

The LTMS agencies are adopting the following policy to ensure that the appropriate issues are adequately addressed in any consideration of CAD in the future:

- *The LTMS agencies will address, as appropriate, the issues identified in Table 5.1-5 during site-specific assessments of proposed CAD sites for NUAD-class dredged material.*

5.1.3.4 Levee Reuse

The potential environmental impacts evaluated in this EIS/EIR that are associated with use of dredged material on levees generally include only those impacts that are unique to the use of dredged material for this purpose. Impacts that could occur as a result of levee maintenance or stabilization, independent of the source of fill used (such as temporary loss of vegetation on the levees), would have to be addressed in project-specific evaluations and are not directly covered here. The material suitability/sediment quality policies (section 5.1.1.2) will ensure that pollutant levels do not pose environmental impacts. The other potential environmental concern is that the salinity of dredged materials may be higher than that normally found in waters or habitats adjacent to levees. As overall guidance, the reuse of dredged material for levee maintenance and rehabilitation must carefully consider, but not be limited, to the evaluation of the following issues: (1) site selection; (2) construction; (3) facility administration and maintenance; and (4) regulatory, mitigation, and monitoring requirements. Specific engineering guidance addressing the reuse of dredged material for levee maintenance and rehabilitation can be obtained from the LTMS Reuse/Upland Site Ranking, Analysis, and Documentation report (LTMS 1995d) and other LTMS upland/reuse technical studies reports. To ensure that these issues are appropriately addressed in project-specific evaluations of the use of dredged

material on levees, the LTMS agencies will adopt the following general policy:

- *The LTMS agencies will address, as appropriate, all of the issues identified in Table 5.1-6 in site-specific assessments of proposed levee maintenance, stabilization, or construction projects using dredged material.*
- *To address water quality concerns associated with the reuse of dredged material for levee repair and stabilization in the Delta region, only material determined to be suitable in regard to pollutant and salinity concentrations, as well as material which has been processed to reduce pollutants and salinity to suitable concentrations, will be used for this purpose. This may involve such control measures as directing only material dredged from the eastern portion of San Francisco Bay, where sediment salinity concentrations are lowest, for reuse purposes in the Delta region.*

5.2 CLEAN AIR ACT CONFORMITY ANALYSIS

5.2.1 Introduction

As required by the CAA, states establish State Implementation Plans (SIPs) to ensure that areas in attainment of the National Ambient Air Quality Standards (NAAQS) remain in compliance with these standards and that they have a viable plan for nonattainment areas to reach attainment. Section 176(c) of the CAA requires that federal actions conform with the most recent federally approved SIP. Conformity to an implementation plan means that:

1. A project will conform to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards, and
2. A project will not (a) cause or contribute to any new violations of any standard in any area, (b) increase the frequency or severity of any existing standard violation in any area, or (c) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area. The determination of conformity shall be based on the most recent estimates of emissions, as determined by the metropolitan planning organization or other agency authorized to make such estimates.

Table 5.1-5. Overall Guidance for Open-Water Confined Aquatic Disposal (CAD) Sites
(page 1 of 2)

<i>Type of Issue</i>	<i>Issues to be Addressed During Project-Specific Review</i>
Site Selection	<p>Depositional/erosional characteristics</p> <ul style="list-style-type: none"> • Relatively depositional locations reduce dispersion during placement, the potential for later cap erosion, and the need for armoring or long-term cap maintenance • Relatively erosional locations increase concerns about dispersion during placement, the potential for cap erosion, and the need for armoring or long-term cap maintenance <p>Current velocities</p> <ul style="list-style-type: none"> • Water column currents (affect dispersion during placement) • Bottom currents (affect resuspension; erosion of mound and cap) • Storm-induced waves (affect maximum bottom current velocities) <p>Bathymetry that may confine the material and reduce dispersion and erosion</p> <ul style="list-style-type: none"> • Natural or man-made depressions • Other geometric features including constructed subaqueous berms <p>Other siting issues</p> <ul style="list-style-type: none"> • Location relative to sensitive resources • Capacity to meet the disposal need (including multiple projects) • Depth and width needed to contain the spread of material during placement • Depth needed for barge access • Potential for interference with navigation traffic or other activities • Consideration of regional and/or interagency habitat plans (e.g., the Wetlands Ecosystem Goals Project)
Design	<p>Potential water column impacts during placement</p> <ul style="list-style-type: none"> • Release of contaminants • Water column toxicity • Mass loss of contaminants • Initial mixing <p>Efficacy of cap placement</p> <ul style="list-style-type: none"> • Type of capping material • Dredging/placement method for contaminated sediment • Dredging/placement method for capping material • Compatibility of site conditions, material types, and dredging/placement methods <p>Long-term cap integrity</p> <ul style="list-style-type: none"> • Physical isolation of contaminants • Bioturbation of the cap by benthos • Consolidation of the sediments (confined and cap material) • Long-term contaminant loss (due to advection/diffusion) • Potential for physical disturbance of the cap (e.g., by currents, waves, anchors, ship traffic) • Assessment and development of appropriate engineering guidelines for seismic events

Table 5.1-5. Overall Guidance for Open-Water Confined Aquatic Disposal (CAD) Sites
(page 2 of 2)

<i>Type of Issue</i>	<i>Issues to be Addressed During Project-Specific Review</i>
Design (continued)	<p>Cap composition and thickness (the determination of cap thickness should include all of the factors listed; interim versus final cap designs may differ)</p> <ul style="list-style-type: none"> • Thickness needed for physical isolation (~ 20 cm typically needed for chemical seal) • Thickness needed for bioturbation (~ 40 to 50 cm typically needed in San Francisco Bay) • Consolidation of both confined and cap material • Potential need for cap armoring against worst-case erosive events
Regulatory, Mitigation, & Monitoring Requirement	<p>Determination of the need for federal permits or reviews</p> <p>Determination of the need for state permits or reviews</p> <p>Determination of the need for local approvals</p> <p>Evaluation of proposed mitigation and monitoring plans to ensure compliance with all applicable federal and state regulations and policies</p> <p>Consultation per Section 7 of the Endangered Species Act</p> <p>Evaluate proposed projects in terms of their likelihood of success, as shown in monitoring of smaller scale demonstration studies conducted in the Bay Area.</p>
Monitoring	<p>Ensure contaminated sediments are placed as intended, with acceptable levels of dispersion/release</p> <ul style="list-style-type: none"> • Pre-disposal bathymetry/baseline surveys using a SVPC¹ system, as appropriate • Plume monitoring during placement <p>Ensure cap material is placed as intended, and that required thickness is attained and maintained</p> <ul style="list-style-type: none"> • Intermediate post-capping bathymetry/SVPC¹ surveys • Core samples through cap immediately after capping <p>Ensure cap remains effective in isolating the contaminated material</p> <ul style="list-style-type: none"> • Periodic post-capping bathymetry/SVPC¹ surveys • Periodic core samples through cap
<i>Note:</i> 1. SVPC = Sediment Vertical Profiling Camera system	

Table 5.1-6. Overall Guidance for Levee Reuse

Type of Issue	Issues to be Addressed During Project-Specific Review
<i>Beneficial Reuse of Dredged Material for Levee Repair and Stabilization</i> — Use dredged material for levee repair and rehabilitation to the maximum extent possible, taking full consideration of engineering and environmental constraints.	
Site Selection	Evaluation of the suitability of the proposed dredging technique in terms of site limitations (e.g., ability to construct containment facilities for hydraulically dredged material, material stockpile capabilities, etc.)
	Evaluation of the ability to transport material to a site (e.g., deep-water access [-15 to -17 feet MLLW], suitable roadways for land transport of material, etc.)
	Evaluation of proposed site conditions, including: <ul style="list-style-type: none"> • Condition of existing levees • Existing habitat and special status species • Geological engineering evaluations of the ability of levees to handle the weight of the new dredged material for repair/stabilization • Extent of levee repair and stabilization material needed • Characteristics of the dredged material to be used (e.g., grain size, concentrations of chemical constituents) • Cumulative impacts associated with reuse of dredged material for levee repair and stabilization
	Suitability of the location in terms of avoiding impacts to agricultural, industrial, and municipal water supply intakes
Construction	Evaluation of the suitability of proposed material off-loading and on-site placement
	Compliance with identified geo-engineering constraints at the placement site
	Evaluation of the ability to avoid potential adverse environmental impacts (e.g., surface and groundwater, plant communities, sensitive wildlife species, and riparian or other wetland habitat areas)
	Evaluation of proposed site monitoring activities during the construction phase
	Evaluation of the suitability of a levee repair/stabilization site to reduce pollutant concentrations (salinity, metals, etc.) in the dredged material
	Preferential use of sandier dredged material for Delta levee repair and rehabilitation work
	Compliance with applicable design standards for levee repair/stabilization, as specified by state and federal regulations and policies
	Assessment and development of appropriate engineering guidelines for seismic events
<i>Coordinated Approach for Dredged Material Reuse</i> — LTMS agencies will aid, to the extent possible in the development of an organization and a mean of communication between dredgers, the California Department of Water Resources, the COE, and local flood control reclamation districts to identify levee repair/rehabilitation sites that can best use dredged material.	
Facility Administration & Maintenance	Evaluation of the proposed management of all construction operations and post-construction maintenance
	Evaluation of the proposed inspection and supervision of contractors working on site
Regulatory, Mitigation, & Monitoring Requirements	Determination of the need for federal permits or reviews
	Determination of the need for state permits or reviews
	Determination of the need for local approvals
	Evaluation of proposed mitigation and monitoring plans to ensure compliance with all applicable federal and state regulations and policies
	Consultation per Section 7 of the Endangered Species Act

In accordance with Section 176(c) of the CAA, the EPA promulgated the final conformity rule for general federal actions on November 30, 1993, which is codified as 40 CFR 51 Subpart W, and 40 CFR 93 Subpart B. The 40 CFR 93 Subpart B applies to federal agencies until states revise their SIPs to adopt a conformity rule at least as stringent as EPA's rule (40 CFR 51 Subpart W).

For the programmatic level of analysis considered in this document, air quality emissions are not yet reasonably foreseeable and therefore no conformity determination will be made at this time. However, on a project-specific basis, projects implemented under any of the alternatives considered as part of the LTMS program may (depending on dredge material quantity, dredging locations, disposal locations, and transport

routes) result in air emissions sufficient to trigger the need for a conformity determination. The conformity process is discussed in the following sections, but final conformity determinations would have to be made on a case-by-case basis as individual projects are defined. Maintenance dredging and debris disposal projects where "no new depths are required, applicable permits are secured, and disposal will be at an approved disposal site" are exempt from the conformity rule requirements [Subpart 93.153(c)(2)(ix)].

5.2.2 Regulatory Background

According to 40 CFR 93 Subpart B, determining conformity is essentially a two-step process: (1) applicability analysis and (2) conformity analysis. The applicability analysis is performed according to Subpart

93.153, wherein de minimis thresholds based on the region's nonattainment status and regional emission levels are established for total project direct and indirect pollutant emissions. The conformity analysis is not required for projects where the total direct and indirect emissions caused by the federal action are less than the respective thresholds. The definitions of total direct and indirect emissions for conformity purposes distinguish emissions according to timing and location rather than the type of emission source. Direct emissions occur at the same time and place as the federal action. Indirect emissions include those that may occur later in time or at a distance from the federal action. In addition, the conformity rule limits the scope of indirect emissions to those that can be quantified and are reasonably foreseeable by the federal agency at the time of analysis, and those for which the federal agency can practicably control and maintain control through its continuing program responsibility.

If required by the applicability analysis, the conformity analysis should consider whether the project conforms to the guidelines of the most recent federally approved SIP, as stated in section 176(c) of the CAA. Until recently, the San Francisco Bay Area Air Basin (SFBAAB) portion of the SIP approved by the EPA was the 1982 *Bay Area Air Quality Plan* (Air Quality Plan) (Bay Area Air Quality Management District [BAAQMD], Association of Bay Area Governments [ABAG], and the Metropolitan Transportation Commission [MTC] 1982). This plan was required to demonstrate attainment of the ozone (O₃) and carbon monoxide (CO) NAAQS by 1987 in the SFBAAB, but ultimately failed to reach its goals. Since no O₃ violations occurred in the SFBAAB from 1990 through 1992, the BAAQMD requested the EPA in 1993 to redesignate the region as attainment for O₃ in the submittal of the *Redesignation Request and Maintenance Plan for the National O₃ Standard* (BAAQMD, ABAG, and MTC 1993) (O₃ Maintenance Plan). The Maintenance Plan adopts most of the emission control measures identified in the 1982 SIP and includes new transportation emission control measures. Upon final approval of the O₃ Maintenance Plan by the EPA, this redesignation became effective on June 21, 1995. As part of the approval process for the Maintenance Plan, the EPA determined that reliance on volatile organic compound (VOC) control measures would be sufficient to maintain the O₃ standard and the nitrogen oxides (NO_x) class of compounds was given the status of an exempt pollutant (60 FR 27028-27041). However, the O₃ Maintenance Plan contains contingency measures that would implement NO_x Reasonably Available

Control Technologies (RACT) in the event of an O₃ standard violation.

Since violations of the O₃ standard occurred in 1995 and 1996, the EPA is in the process of redesignating the SFBAAB from attainment/maintenance to nonattainment of the O₃ standard. This redesignation is expected in July 1998 and will require the BAAQMD to prepare a new plan that demonstrates attainment of the O₃ standard within a mandated time frame.

In addition to the O₃ redesignation, the BAAQMD requested the EPA to redesignate the SFBAAB as in attainment of CO, since the region did not record any violations of the 8-hour CO NAAQS for the 2-year period of 1992-1993 (the 1-hour standard for CO has not been exceeded in the region since 1985). Credit for this air quality improvement can be traced to improvements in the vehicle inspection and maintenance (I&M) program, additional contingency measures adopted in 1990, and the introduction of a winter-time oxygenated fuels program, as required by the 1990 CAA. The request for redesignation is presented in the *Redesignation Request and Maintenance Plan for the National CO Standard* (BAAQMD, ABAG, and MTC 1994). This CO Maintenance Plan contains a contingency measure that would improve the effectiveness of the existing I&M program in the event of a CO standard violation. On June 1, 1998, the EPA redesignated the SFBAAB to attainment of the national CO standard.

5.2.3 Applicability Analysis

All activities associated with the LTMS, except activity occurring in the Delta area and disposal at sites outside of the 3-mile limit of BAAQMD regulatory jurisdiction, are located within the SFBAAB. The SFBAAB is currently designated as a maintenance area for ozone and CO, attainment for nitrogen dioxide and sulfur dioxide, and unclassified for particulate matter less than 10 microns in diameter (PM₁₀). Therefore, the applicable de minimis thresholds for the SFBAAB are 100 tons per year of VOC and CO [Subpart 93.153(b)(2)], as the region is presently exempt from the NO_x de minimis threshold. Additionally, emissions of VOC and CO must not exceed 10 percent of the total SFBAAB inventories of these pollutants [Subpart 93.153(i)]. If total project direct and indirect VOC and CO emissions are less than the de minimis thresholds and less than 10 percent of the area inventory for VOC and CO, the project is assumed to conform, and further conformity analysis would not be required. Since the EPA will redesignate the SFBAAB to nonattainment of

the O₃ standard by as early as July 1998, the O₃ de minimis thresholds for the purpose of conformity applicability analyses in the region could become more stringent as a result of this action.

Emissions from LTMS-related activity occurring in the Delta area could potentially affect the Sacramento County portion of the Sacramento Valley Air Basin (SVAB) and/or the San Joaquin County portion of the San Joaquin Valley Air Basin (SJVAB). Sacramento County is designated as in “severe” nonattainment of the federal ozone standard, “moderate” nonattainment of the federal CO standards, and “moderate” nonattainment of the federal PM₁₀ standards (see section 4.7.2 for an explanation of the nonattainment classification scheme). The applicable de minimis thresholds for emissions occurring within Sacramento County are therefore 25 tons per year for ozone precursors, 100 tons per year for CO, and 100 tons per year for PM₁₀ [Subpart 93.153(b)(1)]. San Joaquin County is in “serious” nonattainment for ozone and PM₁₀, and the Stockton urbanized area is in “moderate” nonattainment for CO. The de minimis thresholds for emissions in these areas are therefore 50 tons per year of ozone precursors, 100 tons per year of CO, and 70 tons per year of PM₁₀ [Subpart 93.153(b)(1)].

The applicability analysis would focus on the direct short-term emissions associated with dredging, transport, and disposal activities. Long-term emissions from the change in shipping activities that would occur upon completion of project dredging, transport, and disposal activities are assumed to decrease and provide beneficial air quality impacts.

Due to the deepening of the navigational channels and harbors provided by the LTMS projects, ships would be able to call more fully loaded, and future cargo throughput per ship visit would increase. As a result, fewer ships would be required to transport the same amount of cargo compared to the existing fleet, and fewer emissions would be produced over the long term for a given amount of cargo throughput. The main reason for this decrease in emissions is that a decreased number of ship visits would eliminate a substantial amount of emissions from cruising, maneuvering, and queuing activities, and tugboat assistance.

5.2.4 Conformity Determination

If total project short-term emissions from a proposed LTMS action would exceed the de minimis thresholds,

conformity would have to be demonstrated in one of the following ways:

1. Show that total project emissions are accounted for in the applicable SIP;
2. For O₃ and NO₂, provide offsets of total project emissions so there is no net increase in emissions;
3. For criteria pollutants other than O₃ and NO₂, perform dispersion modeling of project emissions to show no violations of the NAAQS;
4. For O₃ and NO₂, where EPA has approved a revision to an area’s attainment/maintenance plan after 1990,
 - a. Demonstrate that the federal activity emissions plus baseline emissions would not exceed the emissions budget in the applicable SIP, or
 - b. When the federal activity emissions plus baseline emissions exceed the emissions budget in the applicable SIP, obtain a written commitment from the state governor to revise the SIP to include the emissions; or
5. For O₃ or NO₂, where EPA has not approved a revision to an area’s attainment/maintenance plan after 1990, demonstrate that the federal activity emissions will not increase emissions with respect to the baseline emissions.

5.3 ALTERNATIVES DEVELOPMENT

This section of the EIS/EIR describes development of a range of alternative long-term management approaches for San Francisco Bay Area dredged material that meet the overall goals and objectives of the LTMS. Public comments (see Chapter 2) and initial agency evaluation have identified that any alternative should be based on disposal in a *combination* of the three placement environments. Public comment also indicated the need to address cumulative environmental and economic impacts and benefits over the entire 50-year LTMS planning period. In this section, an initial range of alternatives is developed based on the LTMS planning estimates for long-term dredging and disposal volumes, and this dredged material is distributed among the three placement environments in a variety of ways. Section 5.3.3 describes the alternative management approaches retained for preliminary consideration. Each alternative consists of a dredged material distribution scenario, coupled with the policy-level mitigation measures